UNIVERSITY OF ALBERTA

The Channel Tunnel Project 1871 - 1883: A Study in Public Sector Mismanagement

BY

Robert Bryce Culham

A Thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Master of Arts.

DEPARTMENT OF HISTORY

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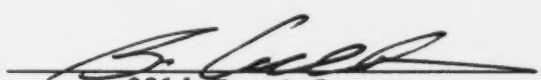

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "The Channel Tunnel Project 1871 - 1882: A Study in Public Sector Mismanagement", submitted by Robert Bryce Culham in partial fulfillment of the requirements for the degree of Master of Arts.

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ABSTRACT

The objective of this thesis is to offer an additional explanation for the 1883 abandonment of the Channel Tunnel to that which is generally accepted. It is arguable that xenophobic tendencies of Britain's military establishment were a crucial element, however the actions of certain civilian members of government suggest that the abandonment also had deeply rooted economic and political causes.

The philosophy of *laissez-faire* and the legal traditions that supplied railway companies with their powers were integral aspects of British economic policy, but were constantly being adjusted as the government redefined priorities. The process of controlling private railways without universal or permanent legislation made it difficult for the British government of the day to foresee the consequences of committing themselves legally, technically or financially to the tunnel project. Due to the massive requirement of money and research, the British tunnel companies found themselves unable to undertake the project without substantial monetary support. The long term nature of investment returns and the uncertain technical merits of the scheme prompted little confidence in holders of private sector risk capital, and still less so with no public sector commitment.

The British government may be accused of mismanagement on several accounts: they failed to carry out domestic impact assessments early enough in the scheme's gestation in order to give the companies and the French government a definite answer as to Britain's position; they negotiated a tunnel treaty with the French, before determining the utility of the tunnel for the United Kingdom, thus providing Paris as well as the companies with the inaccurate impression that the British government was committed to constructing a fixed-link. Finally, and perhaps most importantly, the government's failure to communicate a comprehensive message might have led British military men to believe that a Channel Tunnel was not within the realm of the possible and certainly not in their lifetime.

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Glossary of Terms

Anglo French Channel Tunnel Commission

A small Anglo-French task force that sat from 1875-1876 and represented each country in the negotiations for the terms of the draft treaty. Besides dividing the share of ownership and jurisdiction between the two countries, it defined the source and extent of power wielded by each government in terms of making sanctions to tunnelling firms.

Anglo-French Submarine Railway Company(AFSR)

The firm founded by William Low after his professional falling-out with John Hawkshaw of CTC. AFSR failed to raise sufficient starting capital and was taken over by SERC in 1881. Low's twin tunnel design along with his consulting service were also employed by SERC.

l'Association du Chemin de Fer Sous Marin entre la France et l'Angleterre (ACFS)

The French Channel Tunnel company which possessed the sole concession in France to construct a fixed link. Half its assets were owned by the French railway firm Chemin de Fer du Nord Anglo French.

Board of Trade

The cabinet department in the British government that had among its duties the protection of the Crown's jurisdiction over the foreshore. The Board was directed by Joseph Chamberlain after 1880 and was the prominent player in checking SERC's violation of the seabed under the foreshore area.

Board of Trade Committee on the Channel Tunnel

The committee summoned by Joseph Chamberlain, in 1881, whose task was to review military questions related to the proposed Channel Tunnel.

British Sessional Papers (BSP)

All papers commissioned by the House of Commons including committee proceedings, reports, and various enquiries. All government correspondence and intelligence cited here concerning the Channel Tunnel, apart from the Hansard Parliamentary Debates, were taken from this source.

Channel Tunnel Committee

A private, profit-oriented effort, not to be confused with the Joint Anglo-French Treaty Commission of 1876. It was the product of a partnership of French businessman Michel Chevalier and Lord Richard Grosvenor, chairman of an already extant English Committee on the Channel Tunnel.

Channel Tunnel Company (CTC)

The first English company, founded in 1872 under the leadership of Lord Richard Grosvenor, director of LCDR until 1873. The Company was formed when the Anglo-French Committee was dissolved.

Draft Anglo-French Treaty of 1876 for a Channel Tunnel and Submarine Railway

The document defining Anglo-French boundaries and juridiction with respect to ownership and operation.

Draft Report of the Select Committee on the Channel Tunnel

The document that contains the recommendations of the Joint Select Committee of 1883.

Folkestone

Hamlet six miles southwest of Dover. It was between these two locations that SERC sunk its shafts to construct the decending Tunnel that ran under the coast to its point of driving toward France, below Shakespeare Cliff a mile south-west of Dover.

Joint Select Committee on the Channel Tunnel

The scientific committee brought together in 1883, to recommend to the British government whether or not the work towards the Channel Tunnel should be permitted to continue.

London Chatham and Dover Railway (LCDR)

The railway firm whose lines were to be connected with CTC's tunnel works. LCDR's directorship was transferred from Lord Richard Grosvenor to J.S. Forbes in 1873.

St. Margaret's Bay

The point on the English coast at which CTC's tunnel turned on a south easterly curve toward France.

Sangatte

Hamlet four miles south-west of Calais, near where the French tunnel veered north-west on its route to England.

Shakespeare Cliff

The point on the English coast at which SERC's tunnel made its turn in a south-east direction toward France.

South Eastern Railway Company (SERC)

The railway firm chaired by Sir Edward Watkin, which acquired its SERC Ltd. Act in 1881 to begin work towards the construction of a Channel Tunnel. Watkin transferred all tunnel capital and assets to an offspring company, the Submarine Continental Railway Company, which he formed in the same year. Only the name of the parent company, SERC, is used in this thesis to save confusion.

Introduction

In her article on French business interests and the Channel Tunnel on the eve of the First World War, Professor P. Prestwich makes reference to an analogy coined during an Anglo-French conference on the proposals for a fixed link between the two countries held in the 1970's. A high-ranking French civil-servant compared the history of the scheme to a bicycle which wavered on account of an element of instability, but maintained a momentum due to "its forward motion." There is a sense that if the speaker had not been restricted by the conventions of diplomatic tact, he might have added that it was France which provided the momentum and Britain the precarious wobble. [1]

The analogy is appropriate for one indisputable fact: in every case before the 1980's, where serious Anglo-French discussion was begun on the possibilities and benefits of building an under-channel link, it has been the British who have pulled out of the negotiations. On two separate occasions this happened when Channel Tunnel projects were under construction, in 1883 and 1975. There are few examinations into the

failure of technological schemes for either Britain or France of the late nineteenth century, however, the abandonment of the Channel Tunnel by Britain in 1883 presents historians with the opportunity to probe this question.

The following treatment will focus upon two specific objectives: first this introduction will show that contrary to conventional arguments, abandonment was not precipitated by changes in public opinion. The second objective, coming in the body of the thesis, will be to demonstrate that from the inception of the negotiations with France in early 1870's through to the pull-out in 1883, the British government displayed an unwillingness to commit itself to the idea of the fixed link.

The conventional argument accepted by most historians is that Britain's chief motivation for abandoning the Channel Tunnel was founded on the views of the military establishment and several prominent civilians who saw the project as a hazard to the security of the nation. They feared French ambition and argued that no boost to trade gained by a tunnel could compensate for the constant threat of invasion.

Conventional writers state that the ongoing distrust between England and France triggered an invasion panic in the United Kingdom in 1882, forcing Her Majesty's Government to suspend the project indefinitely.

One conventional historian Jean-Pierre Navailles writes that during this same period there existed a "collective fear that took hold of the country."[2] Navailles produces perhaps the most balanced account, studying the effect of British policy from Palmerston's days as head of the Foreign Office. Like most of his fellow writers on the tunnel, Navailles assumes that Napoleon III's adventurism in Europe between 1840 and 1860 contributed to the growing angst in Whitehall towards Paris. Navailles provides a clear, concise depiction of the tenuous peace that existed between the two countries which he describes as a "fragile entente." He quotes the statement by Palmerston the Foreign Minister, in 1846 that the French still remembered Trafalgar and would welcome an opportunity for revenge.[3] Alarmists in the 1840's were "trying to sway public opinion from internal difficulties and obtain an increase in military spending [and] excelled at evoking the spectre of the 'French peril.'"[4] Navailles points to

several incidents which added fuel to the alarmist campaign before 1860. The French invasion of Italy was followed by the annexations of Nice and Savoy. Before this, there had been the announcement, during the 1850's, that the French were secretly preparing an invasion plan for England. [5] Navailles ends his commentary on foreign policy by noting that the 1860's were marked by an abatement of the alarmist sentiment - a development facilitated by the death of Palmerston in 1865. [6]

While none of these secondary readings are clear about the impact of diplomatic relations on the fate of the Channel Tunnel, they are in agreement as to the immediate cause of the British pull-out. Slater and Barnett, for example suggest that "opposition to the tunnel had been growing [in Britain] ever since the first concessions were granted [to the promoters] in 1875, and in the last years before 1882 had reached the proportions of a wave of national hysteria." [7] Another writer, Gosta Sandstrom asserts that "A national panic, fanned by hysteria, swept the country." 8 Deryck Abel insists that ". . . from 1875 to 1882, an emotional upsurge akin to national panic prevailed throughout Britain, at least in and around the Metropolis." [9]

The decision to abandon was the conclusion of two separate government task forces in 1882 and 1883. The first was a commission made up of representatives from the War Office, the Admiralty and the Board of Trade. Its purpose was to review the commercial, legal and military problems using evidence taken from Anglo-French correspondence and from evidence given by committee hearings in which members of the tunnel companies were interviewed. The second commission, a Joint Select Committee of both Houses was asked to issue an advisory report based on the testimony of tunnel company directors, along with military and civil engineers and army strategists. The objective was to decide if the fixed link was commercially feasible and whether a Channel Tunnel could be kept out of the hands of an invading force. The final vote among committee members, all civilian Members of Parliament without a stake in the scheme, went against the project promoters. Indeed, the Joint Committee's decision not to recommend the continuation of construction is the single most important factor resulting in Britain's choice to abandon the work.

The thesis, however, that Anglo-French tensions

culminated in nationwide tunnelphobia in England is, at best, inconclusive. It places much emphasis on Queen Victoria's statement of 1875 that she hoped her government would not encourage the project. For most students of the tunnel, 1875 has become a watershed at the beginnings of British tunnelphobia, after which time opposition was built up to its apex in 1882. While it is clear that the scheme was thrown over mainly for strategic reasons, all available contemporary evidence found in newspaper reports and the Sessional Papers of the House of Commons suggests that the summoning of the Joint Committee, in which the military experts voiced their opposition, was not brought about by any mobilisation of public sentiment. Until 1881, the few articles that appeared in Britain's newspapers were either favourable about the idea of a fixed link or were unbiased, describing simply the technological aspects. The Times and Pall Mall Gazette have been cited here since they gave the most balanced views of the tunnel's progress. In 1873, the Times claimed that the success of a tunnel project under the Channel "will be regarded with feelings of unmixed satisfaction." [18] Two years later, it was no less enthusiastic: "it will

always remain an honourable example of persevering scientific effort and of international cooperation for the common good."[11] Another newspaper, the Daily Journal remarked around the same time that "the Channel Tunnel's accomplishment is to be desired from every point of view; and should it be successful, it will be as beneficial in its results as the other great triumphs of the (sic) science in our times."[12] Between 1873 and 1881 the Times coverage of the project consisted of progress reports usually two or three times a month, none of which expressed disfavour. And as late as July 4, 1881, the Pall Mall Gazette announced that the boring of the tunnel was making "very satisfactory progress."[13]

The introduction of the military question into the columns of the press came suddenly on June 18, 1881. On that day, the Times printed an article which conjured up images of Continental forces invading through a Channel Tunnel. It argued that because of its defensive attributes, the Channel was a national asset: "Nature is on our side at present, and she will continue to if we will only suffer her. The Silver Streak is our safety." Two days later, the Times featured an alarmist letter

which made further overtures to the dangers of a Channel Tunnel. A similar letter was run in the Times on July 4, and for several months thereafter, the alarmist articles disappeared from the Times only to reappear in February, 1882. This began a peak period for articles, which continued through April.

But not all the articles were critical of the scheme. Using the Times again as an example, between June 18, 1881 and the end of September 1883, there exist 21 articles which support the military's concern, 21 which dismiss these fears and 64 which discuss some aspect of construction but with no allusion to the strategic debate. Indeed, the panic over national security seems to have been based on something less than a national scale. Upon examining the columns of Pall Mall Gazette for April, 1882, a peak period for questions in Parliament on the tunnel and its military ramifications, what is striking is that Pall Mall's editor evidently believed that his readers would have a greater interest in a Parliamentary debate over whether to close the ventilators on the street along the Thames Embankment.[14]

The anti-tunnel press reports caused public

demonstrations, but nothing to suggest that the nation had been thrown into panic. In a violent display against the project in late summer, 1882, a small group of Londoners broke the windows of CTC's offices in Westminster for reasons unknown. [15] But more organised opponents of the tunnel were unrelated to the military's fears. In August, 150,000 dockworkers issued a declaration to British tradesmen on the danger of allowing a Channel Tunnel company a monopoly of Continental goods traffic. [16]

On the other hand, not all demonstrations were against the scheme. Labour groups assembled in several large industrial centers to voice their support for the tunnel promoters. On August 28, the Times reported on a meeting of the Executive Council of Industry at which speakers expressed solidarity for the tunnel and were supported by 15,000 workmen in London. [17] Upon examining parliamentary documents, it becomes clear that while the press did play a role in the events of 1882, it merely reinforced the tide of military opinion already ranged against the scheme, which was already established by the autumn of 1881. It was the Times which first proposed the question of strategic

vulnerability in June 1881 but the arguments that forced abandonment were made in the Joint Committee hearings of 1882. The press publicised the general nature of the controversy, but the information published by newspapers was based on the findings of the committee. This suggests that the press was merely informing the public rather than influencing the views of committee members. Futhermore, the fact that neither the House of Commons nor Lords were given the opportunity to engage in public debate over the strategic questions before 1888 may also indicate that although the issue had attained wide-spread interest, the result would have been the same had there been no public pressure. Still, it would be wrong to propose that the press had no impact whatsoever. In June of 1881, the South Eastern Railway Company announced publically that it was boring a test-tunnel through the foreshore towards France. A few weeks later, Joseph Chamberlain of the Board of Trade cited details of the Times article of June 1881, and two brief follow-up letters also in the Times, in memos to the War Office and Admiralty. He then called for a Board of Trade committee on defence.[18]

Within a year, Gladstone's cabinet had accepted

Chamberlain's recommendation for a Joint Committee of Parliament to investigate the defence questions. This marked the beginning of the end for the first attempt to tunnel under the English Channel.

The conventional hypothesis that public hysteria in Britain forced that country's leaders to abandon the proposed Channel Tunnel scheme, is is partly based on the assumption that because the government endorsed the scheme in principle in 1871, and passed private bills for experiments in 1875 and 1880, the majority of decision makers must have been committed to the project throughout this period. Britain's negotiations with the French on the subjects of international boundaries, ownership and operation, have been taken as reinforcement of this position. Here lies the principal difficulty with the conventional argument. As this thesis will demonstrate, if any one element of government thinking prevailed throughout the 1870's, with respect to the tunnel, it was the steadfast aversion to commitment.

It will be useful at this point to present the sectional breakdown of the present work. Following a section on the tunnel's historical background, a second

chapter will assess the problem of government commitment to the Channel Tunnel within the broader context of nineteenth century economic policy making. It will be argued that despite Britain's endorsement of international free-trade, a full commitment to the Channel Tunnel would have been difficult for her to uphold in the 1870's, and only became more difficult as the decade progressed. Naturally, the Channel Tunnel had its advantages: the attraction for Britain lay in the concept that she and France would be drawn closer as economic partners. But although the proposed Channel Tunnel was in line with the pursuit of free-trade, it conflicted with an important precondition to maximum revenue expansion: a tight defence budget. Military spending was curbed to free money for trade investment. Therefore, given the modest size of Britain's land forces throughout the nineteenth century relative to Continental armies, it is curious that both cabinet and parliament gave their assent to a project in 1875 which they must have known could result in large increases in defence spending if tunnel forts were deemed necessary. In fact, the British government had noted that a tunnel would have some impact on defence policy as early as the mid 1870's, but

they accepted the concept of the tunnel with the provision that defence questions be addressed in detail before construction was started. In this sense, the abandonment can be seen a change of policy made by the British in their ongoing attempt to balance maximum trade expansion without sacrificing strategic interests.

In the third chapter, it is proposed that the character of British railway legislation allowed the government to avoid any legal commitment in their concessions to the promoters. British railway law, grounded tunnel companies' economic powers in acts of parliament (thus subjecting every act to amendment). Parliament's proactive amending powers reserved for it the right to intervene on any question, in any manner it saw fit. This enabled the government to grant concessions to the tunnel promoters and clarify boundary and jurisdiction issues with France, without addressing the tunnel's domestic impact. Presumably, the government was against spending public money on assessments, even in the limited form under which railway projects were authorised, until the promoters could prove feasibility.

The origins of these legal principles are complex. The general body of legislation governing railway

development in the nineteenth century, was defined by parliamentary committees. They often empowered companies to pursue profit restructuring (mergers with other railways and regional monopolisation, etc.) In the attempt to regulate against the inevitable rise of fares and haulage rates in a given region, committees insisted that clauses be inserted into individual railway bills, allowing parliament to amend companies' powers. The private acts containing the concessions awarded to the tunnel promoters were fitted with similar proactive powers which permitted parliament to assess the domestic impact of the Channel Tunnel at its own convenience. The government realised this legal arrangement by dividing the concession package into two acts of parliament: the first was to limit the work to experimentation, the second, was to grant clearance for construction after the outstanding domestic questions (such as defence) were clarified to the government's satisfaction. The means of enforcing this came in the article of the concession which stipulated that no tunnel company was permitted to bore beyond the landward boundary of the English foreshore (ie, that section of the seabed between the high and low watermark of the

tide) "without the previous consent in writing of the Board of Trade." [19]

In the fourth chapter, it is argued that traditions governing railway legislation freed the British government from awarding financial aid to the tunnel's promoters. The state's failure to take a more active role in solving financial and technical problems, did little to instill private sector confidence in the project as an investment opportunity. Britain's free-trade system of economic development, dictated that the railway companies were expected to finance their projects whether through their own existing resources or the selling of stocks. But due to the uncertain nature of the tunnel in terms of feasibility, promoters were unable to attract private investors. This accounts for the ten long years between 1871, the date the government approved the principle of the Channel Tunnel and 1881, when the South Eastern Railway Company started the actual construction.

The elements of funding and proactive legislation are closely connected. The failure to plan the project around financial realities (insufficient private interest and railway capital) and domestic

questions (weighing economic gain against defensive vulnerability) in the early stages of the tunnel's conception, meant that the full implications of these elements were not considered in detail early enough in Britain. Questions like profitability and defence vulnerability spawned British misgivings in the 1880's because they were never tackled in the 1870's. It was this connection that provoked the Board of Trade to recommend that these issues be considered by a Joint Committee of Parliament.

The Board's judgement was triggered by South Eastern Railway's plan to secure private sponsorship for the proposed tunnel. The company's chairman, Edward Watkin proposed driving a test-tunnel to France as part of the "experimental stage." This violated that concessionary restriction involving the foreshore and ignited the conflict that arose between the South Eastern Railway Company and the Board of Trade, the subject of the last chapter.

There is one other point to consider. It can be argued that Board of Trade Chairman Joseph Chamberlain summoned the Joint Committee to investigate strategic questions as much for the sake of his department's

administrative integrity. His main goal was simply to stop SERC's tunnel works, but owing to the Board's apparent lack of legal authority, he had to request the joint committee as the means to this end.

Chamberlain probably found the joint committee to be the best solution for other reasons too: the Board of Trade experienced diminished political importance with respect to the tunnel within the cabinet, because of Gladstone's support of the project. But, more significantly, most cabinet leaders seemed aware of a dilemma and were unwilling to speak their minds: the government, tied to the international agreement finalised by the previous Disraeli cabinet in 1876, were unable to appease the anxiety of military professionals. When SERC showed its determination to see the project through, these men who had previously viewed the international talks with quiet indifference now feared for the nation's security. Their sentiment was summarised in the Upper House by the Marquess of Bath, a civilian, when he told that it was unbecoming of the Member of Parliament Lord Brabourne to use his political position to forward his aspirations as Chairman of the Channel Tunnel Company, "to push a

scheme which, however desirable in the interests of that Company, might be, and, in the opinion of many, would be threatening to the integrity and independence of the nation."[28] What the government assumed to be in the interest of many in the 1870's, was, by 1882, perceived generally as profit for a few at the expense of the rest.

Chapter 1

HISTORICAL BACKGROUND

The idea of a fixed link can be traced back into the eighteenth century but it was not until the beginning of the next century that the first concrete proposal was made. During the 1802 Peace of Amiens, a French engineer, Albert Mathieuu Favier, suggested a tunnel sous la manche to the French Emperor. Napoleon was intrigued by the idea but the two nations resumed the war the next year. It was just as well, for the the technological difficulties were tremendous. The main problem was that of ventilation. Mathieu proposed that two tunnels be constructed, each totalling almost nineteen miles in length and, all along the top there were to be air ducts rising from the bored passages, extending above the waterline. The two shafts were to be joined in the middle of the Channel by a man-made island, where horses could be rested or changed. [21]

Another French design was tabled in 1803 before the hostilities were recommenced, and after this, there were

no plans for cross-Channel links until the 1830's. By that time, tunnelling technology had advanced to no small degree. In 1825, the British engineer, Marc Brunton started "construction on a road tunnel under the Thames between Rotherhithe and Wapping. The innovation was a tunnel shield which Brunton himself patented and was used to protect the workmen from cave-ins until more semi-permanent supports could be inserted.[22] However, the principal contributor of fixed link designs during the middle years of the nineteenth century was Thome de Gamond. Between 1833 and 1867, de Gamond carried out several geological surveys and drew up a number of plans for linking the two countries. His schemes included a submerged tube, a submerged arch , a bridge, a train ferry, a causeway and finally a tunnel which he revised several times. All but the ferry and tunnel ideas were ruled out in short order by government studies, usually because of likely impediments to marine navigation. The 1840's, 1850's and 1860's saw a flurry of schemes drawn up, most of which received little attention. [23]

The first tunnel scheme to receive a favourable response from both French and British governments after

1802 was de Gamond's design of 1856. This plan envisioned a stonelined tunnel to connect Calais and Dover, and its most sensational feature was an international port in the middle of the Channel with a stairway providing access from the tunnel below. Napoleon III summoned a commission to assess the feasibility of the project. Its report was enthusiastic, as was the endorsement by the Department of Mines headed by economist and free trade advocate Michel Chevalier who wrote that "it would be a gigantic monument which would exercise an important influence on civilisation." [24] Other French agencies, however, gave mixed reviews: the General Council of Bridges was hesitant, saying that it wanted to see whether the French and Italian engineers could overcome ventilation problems in the construction of the Mont Cenis Tunnel. Reaction to the 1856 scheme was ambivalent in Britain as well. It was perhaps because of de Gamond's numerous feasibility studies that he secured a pledge of cooperation from some prominent British engineers including I.K. Brunel and Robert Stephenson. However, the British Prime Minister, then Lord Palmerston, expressed unequivocal opposition to the idea, asking why he should

"contribute to a work the object of which is to shorten a distance which we find already too short." [25]

The death knell to that proposal came as a result of a sudden breakdown of Anglo-French relations in 1858 rather than from Palmerston's objections. After the attempted assassination of Napoleon III by Orsini, the French alleged that the plot was hatched in Britain. [26]

De Gamond's next and final scheme, of 1866, won international attention at the universal exhibition at Paris in 1867. This time, de Gamond enlisted the talents of the British railway engineers William Low, co-designer of the Box Tunnel on the Great Western Line, and John Brunlees. They performed further geological studies on the Channel's sea bed to confirm the project's feasibility. Low developed de Gamond's plan further in what was considered a technological break-through in tunnelling engineering. Low's scheme offered a possible solution to The ventilation problem. It called for a pair of twin tunnels each with a single rail carriageway, and it was self-ventilating. A special locomotive was designed that worked on compressed air, thus providing the oxygen source. Meanwhile, the main tunnels were to be connected every several meters with

small cross-driftways which would distribute the air, pushed by the trains, evenly throughout the system.[27] The combined plans of these three engineers probably gripped many an imagination in England and France. The surge of excitement may have been due, in part, to a prevailing spirit of free trade in Europe, especially with respect to England and France, both which had signed a Commercial (mutual free-trade) Treaty in 1860. In addition, several engineering feats had been completed by European governments in the late 1860's, including the Suez Canal and the Mont Cenis and St. Gotthard rail tunnels. The first step towards the construction of a Channel Tunnel was taken by Lord Richard Grosvenor, a railway executive, who founded a Channel Tunnel Committee in 1868 to consider fixed-link proposals. Two years later, he was joined by French free-trade enthusiast, Michel Chevalier, and Grosvenor's task force became an Anglo-French concern.[28] But the fanfare over the de Gamond-Low-Brunlees scheme was short-lived; the outbreak of the Franco-Prussian War in 1870 gave neither the French the opportunity, nor Britain the desire to discuss cross-Channel communications.

In 1872, however, there were again reasons for tunnel advocates to assume a positive outlook. Private companies on both sides of the Channel were regaining the support of the governments and were raising share capital. In 1872, Grosvenor founded the Channel Tunnel Company (CTC) with John Hawkshaw, who was later to design the Mersey Tunnel, as chief engineer. A British rival firm, the Anglo-French Submarine Railway (AFSR), was founded a year later by William Low. Originally, both Hawkshaw and Low were contracted by the CTC, but Low had broken ties with the CTC to form his own company after a professional dispute with Hawkshaw.[29] It was not until 1875 that Chevalier formed the French Channel Tunnel company, l'Association du Chemin de Fer Sous Marin entre la France et l'Angleterre (ACFS). William Low's break with and the CTC was over disagreements about both the basic design of the tunnel and the route it should take. Hawkshaw and the CTC opted for a double rail, single tunnel system. It will be remembered that William Low's scheme for a Channel Tunnel was characterised by a set of twin tunnels, each with its own track, both of which were designed to be self ventilating, using a compressed air

locomotive and cross-tunnels. But more significant to the dispute were their differences about the route. In surveys of 1864, Hawkshaw had contracted geologist Hartsink Day to map out the location of the layers of chalk deposits in the Channel bed and on both coasts. Day was able to confirm de Gamond's earlier findings that the structure of rock on both coasts was nearly identical suggesting the Channel had been formed by wind erosion rather than an earthquake.[30] Hawkshaw had then employed several engineers to conduct further experiments and by 1867, he had established that the ratio of depth to width was 1 to 500 which provided a gentle gradient, suitable for piercing a tunnel.[31] His geological surveys had also concluded that the Channel bed consisted of four main strata. From top to bottom (as far as explored) there was a white chalk, a layer of grey chalk, upper greensand and a kind of clay mixture or gault. Hawkshaw chose the thick stratum of grey chalk as the most appropriate tunnelling medium because of its sturdiness, its imperviousness to water and the ease with which it could be cut.[32] Hawkshaw also surmised that the chances seemed favourable that there existed a continuity in the structure of the rock.

This was good news because if there had been a break in the sedimentary foundation of the bed, there would be a strong tendency for the tunnel to leak. But the best news was that according to Hawkshaw's tests, the lower grey chalk was non-water bearing. [33]

The geological evidence gathered by Hawkshaw was confirmed a decade later when a follow-up survey was carried out by French engineers and geologists from the Department of Roads and Bridges. This study, conducted in 1875-6, was much more exhausive and conclusive than that of Hawkshaw. The meticulous French survey engineers made 7,600 soundings in the Strait of Dover and took 3,267 samples from the same area. The results verified all of Hawkshaw's major findings and gave positive proof that the lower grey chalk formed a continuous stratum from shore to shore. But there was one new discovery. Hartsink Day, the geologist for Hawkshaw had only been able to estimate the eastern and western limits of the chalk outcrop. In their investigations of 1875-6, the French surveyors found that the grey chalk off the English coast lay further west than had been anticipated by Day. [34] This supported a hypothesis made by Low as early as 1867,

that the grey chalk was thicker at the western edge of the outcrop than that at the eastern fringe. [35] The scientific source of Low's theory is unknown, but it is reasonable to assume that the French discoveries were, on the whole, accurate. When geologists prepared updated reports for two Channel Tunnel studies in 1959 and 1971, they used the countless French samples from 1876 to supplement their own data, making for more comprehensive results. [36] Hawkshaw's route was to make an 11 kilometer descent from the French entrance to the grey chalk layer, reaching the Channel just north of Sangatte. From there it was to ascend at the British side for another 11 kilometers emerging near St.Margaret's Bay, then veer to the left to eventually meet the lines of the London Chatham and Dover Railway. On the other side, William Low proposed to place the British mouth of the tunnel a mile west of Hawkshaw's point of submergence. Low's reasoning was that it would be safer to bore under the Channel at a point further west, where the grey chalk was thicker. [37]

In terms of starting the actual construction, the first major hurdle for promoters in both countries was cleared in 1874, when the two governments granted the

first concessions to the British and French companies (CTC and ACFS). The terms included permission to carry out on-site experiments on both coasts and a 99 year contract for the use of the land on both shores at St. Margaret's Bay in the United Kingdom and Sangatte in France. The companies were also given a 30 year monopoly of ownership from the time the tunnel was opened for public use.[38] Once the British Foreign Minister, Lord Derby, had forwarded London's official approval of the Anglo-French terms to Paris a few weeks before Christmas, 1874, the way was cleared for work to begin. The concessions were laid out in two separate private acts, in 1875 one passed by each national legislative chamber, both which stipulated that the two companies work from opposite shores simultaneously. Perhaps the most detrimental aspect of the concessions from the standpoint of the British promoters was that they were not entitled to public money for the conduct of experiments. And since the scientific evidence for the tunnel's feasibility was still inconclusive the private sector was never convinced that the tunnel was a safe investment. The result was that very little was

accomplished until 1881, when SERC's director Sir Edward Watkin took control. SERC owned a line running from London through Folkestone to Dover, as well as a rail tunnel under Shakespeare Cliffe on the coast. He was the perfect candidate for getting the tunnel excavations underway. He was an ardent advocate of the Channel Tunnel because of the proximity of his South Eastern lines to cross-Channel traffic. Few people involved with the Channel Tunnel had a deeper understanding of railway financing logistics than Watkin. In his previous thirty years of railway experience he had successfully managed no less than four important companies including the Manchester Sheffield and Lincoln and the South Eastern.

Watkin's first decision was to take over the assets of Low's AFSR, acquiring Low's consulting abilities in the bargain. His next order of business was to acquire his own act of Parliament, the South Eastern Railway Company (Ltd.) Act of 1881, which contained the same basic conditions of the Channel Tunnel Company (Ltd.) Act of 1874. The difference between the two documents was that the second moved the site from St. Margaret's Bay to Shakespeare Cliff. Watkin had decided on the Shakespeare Cliff route long before he became

directly involved with the scheme in 1881. Owing to the existence of his South-Eastern routes, Watkin had been examining the profitability of the project since 1874. On April 14 of that year, Watkin had made a business trip to Paris to meet the chief French promoters of the the Channel Tunnel. On the first of the next month, SERC's engineer, Francis Brady announced that he discovered problems with CTC's tunnel route. Brady later informed Hawkshaw and the CTC of his opinion that St. Margaret's Bay was unsuitable spot from which to drive an under-Channel tunnel. Brady stated that the CTC route would involve boring through water-bearing rock layers before getting to the impervious grey chalk. He suggested that the tunnel should be driven from Folkestone Warren where the impervious chalk content was more consistent.[39] Hawkshaw, however, remained convinced that his route was adequately suited to the project, arguing that the CTC plan did not necessitate boring to such a depth as was required in the SERC proposal.[48] It was this scientific dispute between Hawkshaw and Low which ensured that two companies would pursue two separate schemes in England. Both companies, CTC and SERC would face the challenge of

having to acquire financiers in a business community that seemed indifferent to whether or not a Channel Tunnel was built. Unlike the directors at CTC, however, Watkin of SERC had a plan for attracting investors while construction was in progress. But the plan, which involved boring through the foreshore to demonstrate the tunnel's feasibility to potential investors, contravened the limited nature of SERC's private act of parliament, restricting construction to experimental activity inside the British foreshore. Watkin's defiance of this principle was the turning point in the government's reaction to the scheme.

CHAPTER 2

THE RELATIONSHIP BETWEEN TRADE AND DEFENCE POLICIES IN THE FREE TRADE ERA

Doubts expressed by defence strategists in the early 1880's were the immediate cause of the abandonment of the Channel Tunnel. The tunnel's opponents feared French ambition and argued that no boost to trade gained by a tunnel could compensate for the constant threat of invasion. But in the 1870's the British gave few indications that they would ever hedge on their bid to construct a fixed-link. There were clear economic advantages which led the government to approve the scheme in 1871 based on a desire for improved transport to France. In 1871, a Board of Trade memo noted that it "entertain[ed] a strong opinion as to the inadequacy of the present service, and the importance of adopting any possible means to improve it."[41] Although bridges and improved harbours were considered , the tunnel won the government's approval as the most cost-effective system. In attesting to the advantages of a tunnel in 1858, the

Illustrated London News typified the traditional economic argument made by tunnel advocates. The article gave statistics for the increase in cross-Channel traffic which, due to the development of steam ships and their greater integration with railways, had risen from 350,000 passengers in 1840 to 1,046,000 in 1857. According to the same source, a further incentive to having a tunnel was the looming threat to England's distribution business by the construction of deep-water harbours in Western Europe which were to be linked to the Continent's widening rail network. The Channel Tunnel would:

> . . .prevent that commercial isolation of which England would otherwise be threatened by the completion of the great railway systems which connect the centre of Europe, without break or interruption, with the ports of the east and west of the Continent. The submarine tunnel, by putting the ports of England in direct connection with commercial centers of Europe, in a situation of continuity identical with that of the ports of the Continent would enable England to sustain with advantage the competition which cannot fail to be opened by the junction of the ports of the West with the centre of Europe by means of railways which are in the course of construction. [42]

The Channel Tunnel was also consistent with the widely-held belief that as long as Britain encouraged the free flow of goods and capital over her borders, political events abroad would not effect her commercial success. Much of Britain's decision to sanction the tunnel scheme was founded on the claim that increases in the flow of trade between countries would make war a less palatable option for governments on both sides of the Channel. This notion was encouraged by the belief, embedded in the rhetoric of British Liberalism, that more trade meant more peace. In 1857 the London Illustrated News noted that the increase of Anglo-French trade and cultural exchange promoted by a fixed link would "be the best means of cementing a lasting accord." [43]

I

Britain's rejection of the economic and political arguments regarding the benefits of the Channel Tunnel in 1883 indicates that if the press did not take a leading role in summoning the joint committee of 1882,

there must have been changes in the attitudes of British decision makers. Because of bi-partisan unanimity in support of Free-Trade, the defeat of the Disraeli government by Gladstone and the Liberals in 1880 had not brought a significant change of policy on these issues. Although the first tunnel concessions were granted in 1875 during Disraeli's premiership, Gladstone had supported the scheme before his defeat in 1874 and upheld this position after his return to power in 1880. But the change of governments had little to do with the fate of the Channel Tunnel. It is unlikely that either the Conservatives or the Liberals would have neglected the Crown's jurisdiction of the foreshore. The changes of attitudes in London were not the result of shifts in policy but of the reassessment of priorities within the wider context of economic policy-making.

Policies on economic questions of the last half of the century were founded upon the doctrine of free-trade. By 1860, most economists and politicians in Britain had accepted free-trade as the most effective means of maximising the nation's economic potential. Free-trade was the economic exponent of those ideologies

which dominated British nineteenth century thought after 1850: Liberalism and *laissez-faire* . During the middle years of the century, these ideas began to pass from the realm of theory to that of legislation, that is from the hands of the classical economists like Smith and Bentham to those of the makers of public policy. But as Francois Crouzet argues, while the theoreticians had urged "infringements to the principle, ...the populizers, journalists and politicians who effected the spread of these thinker's ideas let these qualifications drop and proclaimed the ideology of *laissez-faire* pure and simple." [44] For the first thirty years after the Corn laws were passed in 1846 free-trade's wide and enthusiastic acceptance among policy makers swept away theoretical doubts. [45]

Freetrade was compelled by legislation based on the tenets of Adam Smith, Jeremy Bentham and others who argued that British manufacturers could compete abroad more effectively without state regulated protection. It followed that British secondary goods could be produced more cheaply if import tariffs were taken off non-imperial primary goods. With the lowering of all import duties, prices would fall, and British consumers

would possess the means to buy a greater volume of British manufactured products. The exponents of economic liberalism held that while the private producer was the driving-force of the economy, the real objective of production was consumption. Their chief criticism against government intervention was that the import tariffs on non-Empire goods, as enforced by the Navigation Acts were sacrificing "the interest of the consumer. . .to that of the producer. . ." [46]

By the mid nineteenth century, the notion of curtailing mercantile duties to achieve higher domestic consumption was promoted by champions of free trade within government as a means of widening public revenue. Peter Mathias, notes that Westminster had all but recognised this thesis by 1840 when the Report of the Committee on Import Duties concluded that the fiscal objectives of the national budget should "serve the nation rather than a few individuals [producers]." [47]

These fiscal measures would entail the funnelling of taxation towards increasing revenue rather than fulfilling political aims or maintaining defence spending.

Naturally, the introduction of free-trade measures

meant that meant that certain fiscal adjustments had to be made. The revenue gaps created by tariff repeals, were filled by income tax levies begun in 1842. [48] Ajustments also came in the form of mitigating the unwanted effects of unfettered commerce, and free trade's shift from theory to policy was far from complete. Many aspects of free-trade involved sacrifices to a variety of principles and had an impact on several branches of policy: most importantly, overseas economic and political relations, defence strategy and colonial development. In trade policy, tariff reductions were rendered less effective by the fact that they had been implemented unilaterally, rather than through bilateral negotiations with other countries. [49] In defence planning, spending to all branches of the military had been cut to bolster the national revenue in the wake of tariff reductions. This was consistent with Britain's unwillingness to be drawn into a European conflict, but reduced her ability to stop what she could never tolerate - domination of the Continent by a single power. Britain's desire for universal free-trade also meant that she had to promote to her European neighbours the advantages of

international cooperation; this must have been a difficult sell, with Britain, a great colonial power, as the broker. Such inconsistencies reflected the shrinking public and legislative consensus in England about free-trade and even Liberalism's ultimate purpose. As David Thompson puts it, Victorian Liberalism concerned:

> . . .beliefs about means rather than about ends . . . .The ends of maximum production in economics, of individual freedom in politics, of free association in society were assumed rather than considered. . . .It all worked well so long as the sky was the limit. It was when these conditions changed and became less favourable. . . .that [Liberalism's] old implicit ends were no longer enough; and not being clearly formulated or appreciated, it was some time before they were seen to be not enough. [50]

II

Despite the ongoing need for adjustment, free-trade remained dominant in the formulation of British economic policy in the nineteenth century. This affected the production of defence estimates. For devoted free trade advocates like Richard Cobden and John Bright, the fall of Europe's tariff walls would not only bring increased

commercial activity, but would also remove the threat of war and thus any compulsion amongst British leaders to involve the country actively in the affairs of Europe. As open competition created economic specialisation in each competing country, the development of market interdependencies would follow. The result would be a lower incidence of war from burgeoning economic cooperation. The notion of peace through trade was swept along in the wake of immediate economic improvements. This agenda became so entrenched in the philosophy of economic laissez-faire, that by 1870, the former had become a broadly embraced platitude. Peter Mathias has summarised this mentality as an "uncritical ideology [that] had reversed all the seventeenth century assumptions about economic philosophy, that trade meant war." [51]

Indeed the relationship between trade and defence policies in nineteenth century Britain revealed a loose formula for placing commerce before the military. After the capitulation of France in 1815, and the stabilisation of European relations after the Congress of Vienna, defence drew less and less

expenditure from the national coffers. After the Napoleonic Wars, parliament, which controlled the military purse strings demonstrated an aversion to freeing money for the army and navy above a minimum. [52] Limited military resources were stretched to support the defense burdens of a large empire and a small population which valued wealth over military pursuits. Under these conditions, Britain had to rely on her Foreign Office to offer diplomatic solutions to meet external threats to British interests - a practice mainly espoused by the Liberals, but one which both parties, when governing, had little choice but to follow. After the Crimean War, and its negotiated peace settlement, Britain entered a period of withdrawal from active involvement in Europe.

Isolation was partly an economic decision, endorsing the mid-Victorian conception that war was detrimental to Britain's favourable trading position. Contemporary Liberal economists like Gladstone, Cobden and Bright argued that universal free trade would sustain European peace. With peace in Europe, Britain could downscale military spending and pour the freed capital into the development of Britain's economic resources.

As Chancellor of the Exchequer under Palmerston, Gladstone decreased military expenditure from L 73 million in 1859 to L 66 million in 1866. In truth, the Royal Navy retained its dominant world status into the next century, but during the two decades following Servastapol, the size of Britain's regular land forces was cut from 200,000 in 1855 to 115,000 in 1870. As a consequence, the army's strength was hardly impressive compared with its powerful European counterparts. [53] After the Crimean War, the Edinburgh Review attributed this preference for bigger market dividends over military prowess as a "national choice." The same article pointed out that, in part, because of France's geographical position, "she is poorer than England. She is compelled to expend her resources in purchasing security while we prefer being rich and impuissant." [54]

Falling military expenditures were encouraged by the fact that the Balance of Power following the Crimean War permitted Britain to remain aloof from international affairs on the Continent, only to intervene diplomatically if her interests were threatened. During the long interlude of peace of the last half of the century, free-trade co-existed with an untroubled defence

policy. In 1870, the year the Franco-German War shattered the European peace, William Ewart Gladstone, then Prime Minister, wrote an anonymous article for the Edinburgh Review; one particular passage became something of a rallying cry for isolationists:

> "Happy England. . .happy. . .that the wide dispensation of Providence has cut her off by that streak of silver sea, which passengers so often execrate, . . .from the the temptations which attend upon the local neighbourhood of the Continental nations. [55]

The next year, Blackwood's Magazine published the fictional account of a German invasion and England being overrun. [56] Chesney's "Battle of Dorking" and the hypothetical defeat of the British army may have been perceived by Whitehall merely as a backlash against the military inadequacy demonstrated by Her Majesty's land forces in the Crimea twenty years earlier, rather than a warning that Britain need fear an invasion. There seemed to be few fears in London of a French invasion in 1872. Apart from the fact that France's forces were now exhausted by war, the German siege of Paris had brought Britain's sympathy to the side of France and had improved relations between the two governments. In

1877, isolation, according to Lord Salisbury, was still the order of the day as English diplomacy consisted of floating ". . .lazily down stream, occasionally putting out a diplomatic boat-hook to avoid collisions." [57]

But the combination strategy of free-trade and military spending cuts had real economic applications for Britain - the political realities of the prolonged European peace allowed British cabinets to divert public revenue toward augmenting overseas investment. In the heyday of economic liberalism, international political objectives were often brushed aside in favour of promoting external trade. The British government stood by this policy choice to a considerable, even surprising degree. Quite simply, the Foreign Office rarely interfered with the objectives of Britain's private commercial interests abroad. This usually held true even if the overseas goals of the British business community were counter to political biases in Whitehall. Or, as Lord Strang has put it, there was an interest in pursuing the principles of *laissez faire* economics in overseas trade since the 1840's because these pursuits had helped Britain's commercial and

financial position among nations. But, with the exception of negotiated commercial treaties with trading partners, this formula did not breed purely political influence abroad because the government did not exploit economic power as an instrument of foreign policy. Even after 1870, when overseas investment from Britain reached new peaks, the government did not use its wide financial resources to reward or punish foreign governments. [58] One glaring instance was the Foreign Office's decision to continue the flotation of loans to Russia during the Crimean War. [59]

According to one contemporary source, England's spirit of fair-play in international business was followed to offset her daunting superiority at sea. At the turn of the century, Foreign Office senior clerk, Eyre Crowe wrote that England's commercial policy sought to make her trading partners "feel less apprehensive of naval supremacy in the hands of a free trade in England than they would in the face of a predominant protectionist power." [60]

III

Free-trade survived past the end of the nineteenth century as the axiom upon which Britain's commercial policy was founded. But the accompanying shrinkage of defence expenditure had an inevitable cost: the declining condition of Britain's military preparedness. The British army's performance in the Crimea had brought its effectiveness into question. A number of public inquiries resulted in the ambitious but financially-hampered Cardwell reforms beginning in 1868. Although the changes were restricted mainly to organisational and administrative improvements, the Cardwell plan included large on-going military manoeuvres for home-based recruits. This quelled the fears of most Britons for a decade or so, but in reality it did little to change outdated strategies used by British forces in Crimea.[61] The failure of the Cardwell reforms to improve the performance of the army in the field was brought home in the late 1870's when British forces were routed in several colonial campaigns in South Africa and Afghanistan. The value of the adoption of reform had already been reinforced with the rapid and total defeat

of the French armies in 1870-1. Some historians insist that armies of industrialised nations sought to emulate the training standards of the highly efficient Prussian system. They argue that while the French moved to upgrade the professional character of its officer corps, British military schools concentrated on the improvement of tactical skills. The military educators in France and Britain had not grasped the reasons for Prussia's success. German schools placed emphasis on pairing the need for professionalism with a program of broad technical training. The British schools were lacking on both counts. By the 1870's, Britain was no longer in step with the technological military changes being implemented by emerging industrial powers such as Germany. The latter had defeated France not only as a result of the highly professional quality of its officers but because it had used industrial facilities such as railways to overcome the problems of organising and moving an army of such massive proportion. [62] The underlying weakness of the British army was that it found preference in discipline and strength of individual character over technical innovation and ability. [63]

Throughout the Victorian period, critics warned of the strategic dangers of economising on defence. But by the middle 1870's, they were equating vulnerabilities in the nation's defence with free-trade. In 1875, the Pall Mall Gazette was warning against the dangers of paring military costs, making reference to Germany's rising ambitions, and decrying Cardwell's decision not to increase Britain's peace-time forces. [64] The Pall Mall Gazette went so far as to publish a German opinion: that Britain had sacrificed too far military readiness for commerce:

> . . .[due to a] narrow peddling which readily dispenses with her influence and prestige in the world so long as business continues to be good. . . .With her 32 millions of inhabitants and her enormous wealth, England might still have kept herself on a level with the Powers of the Continent; but her military organisation is antiquated and lamentable. [65]

After about 1875, there were signs that this neglect could threaten the commercial viability of Britain and her Empire. With the onslaught of of international depression, came Britain's relative decline as an economic power. After 1875, the effects of the depression were redoubled by the rise of powerful new trade competitors like Germany and the United

States. The years between 1873 and 1896 were marked by a sharp decrease in world market prices in the agricultural, and to a lesser extent in the trading and industrial sectors. The "Great Depression" cut into profits throughout Europe and America, and British confidence in its recent position of dominance was badly shaken as foreign tariffs were implemented increasingly after 1870. These impeded sales of British manufactured goods in overseas markets. And there was no consultation in the fact that after 1879, Britain's trading partners began to re-erect tariff walls.

These developments triggered doubts about the effectiveness of free-trade ideology as guarantor of Britain's once predominant economic status among nations. One historian views the summoning of a Royal Commission on the Depression of Trade and Industry in 1886 as evidence that contemporary leaders in Britain had been conscious of the nation's economic decline.[66] These apprehensions gave rise to the "Fair Trade" or protectionist movement in the 1880's, further proof of rising dissent against the economic arguments of non-protectionism. By the early 1880's, the apparent economic disadvantages of free-trade and its growing

threat to Britain's trading position and the very canons of economic liberalism came to be questioned at the bi-partisan level. And there were calls from within Britain for a return to more aggressive colonial initiatives. Writers like J.R. Seeley, himself a Liberal, warned in 1883 that more attention needed to be paid to the military maintenance of the empire if England hoped to hold her status among nations. The result was the forcing together of matters of trade and defence. Economic ills were prompting London to examine the country's military state of readiness. The launching of the ironclad warship Inflexible in 1881 showed that Westminster saw the need to re-assess its naval prowess, while W.T. Stead, another Liberal, triggered a mini-naval scare with his articles of 1884 in Pall Mall Gazette revealing "The Truth About the Navy." [67]

From this discontent about the nation's struggling economy and its perceived slippage as a naval power, there began in the early 1880's what one historian describes as a "xenophobia in British society, a defensive and nationalistic reaction to the challenge of

foreign economic rivalry. . . in order to isolate Britain from an increasingly hostile world."[68] The result, the return of British protectionism, would not come until well into the the twentieth century, but imperial expansion was already taking on a new vigour in Britain and elsewhere by the early 1880's. Neo-Colonialism was antithesis to the long-held doctrine of the free market, which was in turn, grounded in the even larger conviction that Liberalism was the panacea of all ills.

V

With all the possible dangers of priorising trade before defence it is hardly surprising that this policy required periodic adjustments. The precise administrative nature of this process is beyond the scope of this thesis. But its is sufficient to note that in the late 1870's and early 1880's, the government was balancing its priorities between trade and defence. and consequently, there was occasionally a substantial difference between rhetoric on the defence trade relationship and actual policy. The framers of policy,

for example, viewed the practice of free-trade in diplomatic relations in very different terms from its application when it conflicted with imperative defensive interests. Adam Smith, the father of modern free-trade doctrine, had admitted in 1776 that there could be no economic prosperity without political stability and protection from external threat. [69] And a century later, there was still a limit to which British government would impair defensive facilities. These limits included the defence of India and the routes to it through the Near East and Mediterranean Basin, the sovereignty of the Low Countries such as Belgium, providing England access to European markets and of course, naval predominance in the English Channel, without which home defence would have been impossible.

Thus, with respect to official policy priorising commerce in the relationship between trade and defence, actions spoke louder than words. Public statements by political figures in the heyday of free trade often placed commerce and investment as national priorities before defence, and on related matters of on-going concern such as the Empire. But here there remained a vital difference between philosophy and reality. The

actions taken by Whitehall indicated that because of Britain's secure island position and her widespread possessions only home terrene-defence was squandered for the sake of economic pre-eminence. In fact, defence of colonies and the navy were still given considerable attention.

It remains true that most politicians were swept up in free-trade doctrine and hailed its advantages in public declarations. But public statements were not always a reliable indicator of policy decisions. Similarly, the government rhetoric about more trade meaning more peace did not preclude sacrifices to defence spending in every case. The Cardwell Reforms of 1868, sought to improve an outdated military system on a modest budget, and opted for boosting the home ranks inexpensively by withdrawing troops from the colonial posts, including Canada, the most militarily vulnerable. But, while it would appear that colonial interests were being sacrificed, they were never endangered because cuts to imperial defence came out of those possessions like Canada which were on their way to self government. The formal empire still required military protection, and this remained

the destination of most of the troops pulled out of informal empire even after the Cardwell reforms.[78]

Where the Empire was concerned, trade and defence were part of the same equation since imperial protection was no doubt considered critical by Whitehall in the maintenance of Britain's position as leading commercial and industrial power. The chasm between action and statement on matters of trade and defence was displayed in London in mid-century when, despite the move to free trade and the talk of giving up imperial claims, preservation of empire was still perceived as vital to British interests. As early as the 1850's, Government statements on free trade often blurred the boundaries separating policy from cant. In their speeches, many leading politicians of the free trade era spoke of extending the removal of imperial preference to include the shedding of colonial possessions. But this represented either hypocrisy or confusion as to how free trade would serve British overseas trade interests. On the issue of colonialism and its place in free-trade, the actions of the government could not be reconciled with the rhetoric of its ministers. With the emergence of free-trade, political enemies found themselves allied

in rhetoric on the question of what to do with the colonies. While conservatives viewed possessions as economic dead weight, liberals saw them as forms of economic enslavement. Professor Mathias has noted that in the 1850's, "Even Disraeli spoke about colonies dropping away like ripefruit....[and] The strategic debate in favour of 'colonies, shipping and the navy', as the common toast went also dissolved before free trade logic." However, as Mathias qualifies, British naval hegemony was not part of this particular argument in the Commons nor was there any serious thought of stopping British expansion in India or Africa. The source of this inconsistency between ideology and policy is not difficult to trace; the inconsistency existed when Britain's domination of world trade depended on the control of resources in overseas possessions, and the success of free trade relied heavily on convincing her trading partners that economic cooperation between nations was in Britain's best interests.[71] In sum, Britain performed a balancing act between commercial propriety and defence both at home and in the empire. Philosophically, free-trade involved, among other things, decreases in both defence spending and

imperial expansion. But in reality, the empire continued to expand and although national defence readiness was lowered substantially, imperial defence in all holdings but the emerging dominions was preserved and the Royal Navy remained predominant at sea. To uphold a balance, reversals in stated defence policies to fit expenditure guidelines and vice versa, at least under Liberal leadership, were not uncommon. Palmerston, eloquent in his numerous promises of British intervention for weaker European states, was unable to aid the causes of either Poland or Denmark in 1863 and 1864 owing to budgetary restraints. [n] Gladstone, infamous for defence spending cuts, succumbed to public fears of France's naval initiatives in 1884 and committed Britain to an intensive fleet building program. The great anti-imperialist and nemesis of Disraeli, also despatched troops to Egypt in 1882 to protect the interests of British shareholders.

It would be wrong, therefore, to assume that the passage of the private act for the Channel Tunnel experiments represented the British government's firm commitment to the project. In 1882, free trade was still the mainstay of Britain's commercial formula, but

the debate over the Channel Tunnel challenged free-trade's greatest assumption: that political events on the Continent would not interfere with British overseas trade.

Chapter 3

THE IMPACT OF *LAISSEZ-FAIRE* IN TRADE AND RAILWAY LEGISLATION

I

It was argued in the last chapter that while the British government thought of the Channel Tunnel as a tool of trade, they did not commit themselves at any point to the project. But their reservations were also based on the fact that in the 1870's, the British government had not fully examined strategic questions in connection with the Channel Tunnel. In 1875, the Treasury sent letters to the War Office and Admiralty, asking for their observations and concerns on the proposed tunnel in order to advise the Joint Anglo-French commission on the salient issues. The Admiralty's reply to the Treasury was that "as the tunnel does not in any way interfere with Admiralty interests, their Lordships have no remarks to offer on this subject." [73]

In the same year War Office papers indicate that

they also knew that the plans for a Channel Tunnel were being drawn, and that it would involve defensive implications. In May of 1875, the British representatives of the Anglo-French Commission on the Channel Tunnel (summoned to coordinate the two nation's policies so that these could be included in a report to the British Treasury) invited the War Office to submit clauses it wanted in the Anglo-French treaty. In response, the War Office simply reserved the right "of approving the plans of all works proposed by the promoters to be executed . . . within the English portion of the tunnel [at the the promoter's expense]", and the right "of determining at any time either before or after the completion of the undertaking, what works of defence shall . . .be constructed by the promoters." The British commissioners then added a note of warning in their report, that whatever defensive precautions were taken, "the construction of the tunnel must necessarily, to a certain extent, impair the insular position of Great Britain." The most telling phrase, however, was contained in the section defining the War Office's reason for reserving its right of approval: because the defence question was one which could "not be

adequately dealt with at the present time." [74]

During the early 1870's, officials in Britain and France were preoccupied with hammering out details of the bi-lateral draft treaty of 1876 relating to the alignment of concession terms along with the tunnel's construction and operation. [75] But the decision to delay discussions on strategic problems was also due to two factors: first, Britain had no administrative procedure for confirming the consequences of the concession terms given to the British promoters before those powers were enacted; and second, no British authority possessed the means to establish the feasibility of construction. Therefore the government were unwilling to undertake domestic impact assessments on defence and other matters until these questions were clarified.

I

In France, the consequences of concessions were studied in advance of their being granted. Before any concessions were given to public works projects, they had to gain the consent of all relevant government departments and ministers who might have had concerns or

grievances. In the case of the Channel Tunnel, research was conducted by the National Department of Bridges and Roads, the Prefecture of Arras set up a committee to resolve the question of tariffs and a Public Works Committee studied the question of fares.[76] In addition the details of the project were approved by the ministers in charge of Foreign Affairs, the War and Maritime Offices, and finally the National Assembly.[77]

In Britain, the nearest the government came to approving the Channel Tunnel project was to declare that they saw "no objections in principle to the proposed tunnel between England and France."[78] And while the general character of the concession terms was defined by the executive branch of government, the concessions were fragmented into a step by step process each which required parliamentary ratification. The details of this process and its ramifications for the Channel Tunnel will be discussed in chapter four. It will be useful at present to consider the limited role of the executive branch in confirming the results of concessions to railway companies.

In the development of British nineteenth century railway legislation, general powers were given to

companies by private acts of parliament. Because of the massive capital expenditure required for railways and because of the need to appropriate private land for track construction, railways had to be given the powers of limited liability, the capacity to sell shares and the means to land acquisition: all of which required private bill procedure. [79]

This made the process of regulating railway development dependent on the ad hoc decisions of private bill committees rather than on permanent, universal rulings. By 1840, railway service under private ownership had already developed too far to be regulated as efficiently as in other countries such as Belgium and France which had established state control from the beginning. John Clapham concludes that Belgium "had a railway policy when England was fumbling for a policy which she never found." [80]

The British attempted to provide some form of consistency in 1844 when a Railway Department was appended to the Board of Trade to guide committees on the economic merits of schemes. But its objectives became too ambitious for its resources and was soon abolished. [81] Railway commissions attached to the Board

of Trade were also short lived. The first commission formed in 1846, sought to offset the evils of rapid growth: to prevent the formation of monopolies, to check excessive speculation and capital input, to implement safety standards, to set fares and charges and to protect property owners.[82] In practice, however, the commission's powers were "limited to inquiry and publicity" and it was dismantled in 1851.[83] After this date, the Board of Trade itself gave advice to committees, but usually to inform them about "any exceptional legislation proposed by the Bills."[84] Invariably, parliamentary committees took evidence in their hearings at face value, giving little or no weight to Board of Trade reports in their assessments. Private bill committees were made up of interested Members of Parliament who did not recognise precedents from the rulings of previous committees. Thus there was little or no uniformity in the acquired powers of various companies.[85] As a result, the Board found itself struggling to recommend remedies to committees. The Royal Commission of 1867 explained that:

> all committees . . .look upon the merits of the particular case before them, just as a jury does, and will not act upon principles of general policy as laid down by another committee when the justice of the case before them appears to render a departure from such general principles necessary.[86] Five years later the Commission on Railways observed that in some cases committees "threw over the [Board's] Reports and recommended Bills at variance with those Reports. Under such circumstances [the Board's reports had] become useless or worse than useless. . ."[87]

Regulative experiments by executive boards proved ineffective for economic reasons as well. As the nineteenth century progressed, it became increasingly difficult for the public sector to control the growth of regional monopolisation. Railway development in Britain initially followed laws similar to those of the lease infrastructure of canals whereby the way of carriage was owned by its builders, and merchants retained possession of the vehicles, while paying a toll for the use of way. This proved, in the instance of railways to be unworkable on a large scale, and it became increasingly evident to Parliamentary Commissions that railway companies would require monopolistic control over their own lines due to the unremunerative nature of any alternative arrangement. As early as 1840, a Select

Committee of Parliament had recognised that competition on a single line was undesirable not only because it was unprofitable for the owners but because of the inconveniences to passengers travelling across boundaries of ownership.[88]

But a dilemma stood in the way of attempts to universalise merger laws. Profitability and user convenience necessitated regional monopoly ownership, and fair prices required the maintenance of a competitive transport market. Thus, Britain's private ownership legislation was never clearly defined as to "whether it was right to impose upon industries created for private profit the duties and obligations of a public utility."[89] For many firms situated in areas of heavy competition with over-extended capital investment, amalgamations and mergers towards regional monopolies were the only means of survival. The private ownership experiment with few controls at the outset of British railway development had led to the "mania" of speculation and investment between 1836 and 1845. To say that speculation during these years was optimistic would be a gross understatement. In 1845 alone, Parliament approved about 2,200 miles of new lines,

double that which had already existed. It was this disregard of promoters to large capital expenditure and the incurring of high fixed costs, which eventually forced companies to amalgamate or buy out competitors to survive. As one economic historian has summarised it, "Increased traffic was the only escape from bankruptcy. Hence began the long struggle for control of those lines which might provide profitable new connections. With it came the struggle of pre-emption: the building of lines merely to preclude a rival company." [98] British legislators, therefore, allowed railway companies to take measures to facilitate the greatest return for their investment, such as amalgamations and take-overs provided the latter ensured convenient service to users, fair charges and public safety. While liberties granted to companies were approved in private acts, parliament could amend clauses to expand or restrict those powers. The principle first appeared in 1844 and was to be inserted into all subsequent railway bills:

> ...nothing herein contained shall be deemed or construed to exempt the railway by this or the said recited Acts authorized to be made from the provisions of any general. Act relating to such Bills which may pass during the present session of

> Parliament, or of any general Act relating to railways which may pass during the present or any future session of Parliament. [91]

It seems reasonable to assume that as the decades passed, government control of companies' powers relied increasingly on the amending powers of parliament. The 1867 Royal Commission surmised that

> . . .in almost every Act sanctioning new lines there are special clauses conferring particular rights or benefits on individuals or other railway companies to carry into effect arrangements which have been entered into by the promoters to avert opposition to their bill." [92]

The 1872 Committee on Amalgamations described the insertion into private bills of "general powers of selling and leasing" which permitted amalgamation and increased monopoly by "private arrangement." [93] The same report went on to suggest that monopolies in most aspects of operation were practically inevitable and that the main instruments of monopoly, combination and amalgamation had, despite efforts by Parliament to regulate them "proceeded at the instance of companies without check and almost without regulation." [94]

It was not until the 1890's that the government began to assert a an effective measure of

direct control over economic issues such as freight rates. Economic questions became more timely with the onslaught of the Great Depression and the resulting fall of railway profits after 1873. In response to this, companies placed pressure on manufactures and traders by raising freight charges. Also significant were several amalgamation schemes introduced to parliament in 1872. Their passage would have split the industry into regional monopolies and it re-opened the question over the dangers of monopolistic ownership and fair charges.[95] Monopolies continued to be permitted but the tension over rates was built to a climax in 1892 with the passage of a public act applying universal restrictions to rate hikes.[96]

II

The second reason the British government did not review strategic questions was because, in all likelihood, they wanted the promoters to verify the engineering credibility of the tunnel. No department in Whitehall was equipped to recognise officially the scientific merits of the fixed-link as France's

Department of Roads and Bridges had done in 1873. Since the responsibility of feasibility testing was left to the promoters and since no test-tunnels were bored before 1880. It is beyond the scope of this paper to judge whether or not the Department's sanction was professionally sound, but it cleared the way for the comprehensive sanction that the French promoters later attained.

On the English side of the Channel, the Board of Trade was never involved with the purely technical problems of the work. This administered a significant blow against the attractiveness of British shares. Britain, having always relied on private initiative and privately contracted engineers for the creation of its transport system, possessed no permanent, competent public technical authority to advise on the engineering merits of a given project. Technical problems were handled entirely by the tunnel companies, whose engineers were obligated to prove the viability of the scheme as the work progressed from stage to stage. The British civil engineer of the last century performed the tasks of "designers, managers and entrepreneurs all at the same time." The faulty design of the Tay Bridge and

its ultimate collapse in 1879 spelled out the hazards of the "designers-at-risk" approach to the business and "helped to push engineering towards becoming an independent profession", that is, independent of transport companies. [97]

The Channel Tunnel was planned by these entrepreneurial engineers who were virtually staff consultants for the tunnel firms and would be at the center of blame if the design failed during operation. The governing philosophy of the day seems to have held that the fear of libel suit alone would ensure safe designs, and laissez faire again won the day as the Board of Trade could make suggestions on improving design and safety standards but did not possess the powers to compel companies to implement them. [98] In some cases the Board of Trade had no standards to enforce and left it to the companies to use their own discretion to create a sound design. The British government had no standards for testing the strength of structures under wind pressure, the source of the Tay Bridge mishap. [99]

The private nature of transport engineering led the government to rely solely on the profession. The Board

of Trade noted that:

> As regards the engineering difficulties of [the Channel Tunnel], it is scarcely possible for the Board of Trade to offer an opinion. But the high authority of the scientific men who have after careful inquiry, reported in favour of it, affords a ground for a belief that the design is not in itself so impracticable as at first sight it might be thought to be." [188]

The Board was willing to examine all matters of legal equity at the international level, but scientific problems were a matter for individual companies to resolve. This was unacceptable to Lord Grosvenor who cited to the Board of Trade the French half of the Joint Channel Tunnel Committee's concern that:

> As the works on both sides of the Channel must be interdependent, it appears. . . that the technical authority on one side only is insufficient for the determination of the propriety of works of construction submitted by the engineers, and that the engineers of the Board of Trade or other competent English authorities, should act jointly with the French authorities and form a sole authority for settling all technical questions, at least from shaft to shaft. . .

Grosvenor also mentioned that all technical matters in

France were handled by the national Office of Roads and Bridges and suggested that England should have "some higher authority than our own engineers who should be able to meet the Ponts et Chaussees on an equal footing. . ." [181]

The government's refusal to grant a complete concession to the promoters was founded on the lack of a central authority for administrating concession terms or judging the technical tunnel experiments or construction. It involved the use of parliamentary pro-active legislation in order to check the progress of the enterprise, but without any form of commitment. This raised difficulties for the promoters: the scheme's unusually high cost, and construction time along with its perplexing engineering and legal aspects, complicated the task of attracting private sector investment. As Edward Watkin viewed it in 1875, because of the limited concession (for experiments), even if the tunnel companies raised enough equity for the successful completion of geological experiments, prospective shareholders would be unlikely to invest in the tunnel until it could be proved conclusively that a tunnel could be bored. To prove this would require an actual

demonstration (ie, the boring of a complete test tunnel) and this was not an option for Watkin, unless he was willing to challenge the wording of his concession. The government's definition of 'experiment' did not include the boring of a complete driftway. Watkin's prediction was accurate. By 1880, the companies found themselves trapped between a skeptical business community, and an inability to demonstrate the tunnel's engineering merits because of a lack of capital and a limited concession. In order to protect its investment, the South Eastern Railway Company countered the letter of its private act of parliament. It attempted to begin construction of a test tunnel before the House granted it clearance. [182]

III

The weakness of the executive in defining railway companies' powers spawned a system of industry controls that was neither universal nor permanent. For this reason, authority was vested instead in ad hoc parliamentary committees, a leading reason for the public sector's commercial and technical aloofness from railways. This legislative tradition helped place the

tunnel promoters in an untenable situation, removing any possibility for public financing, while lowering the propensity of the promoters to attain private capital. In 1880, newly armed with an act allowing him to conduct geological experiments on the Kentish coast, SERC's director, Edward Watkin, faced the dilemma that he would have to obtain private sector confidence in the project's feasibility in order to secure capital; but without public money, he could not finish the scientific experiments: a precondition for private sector investment. In effect, without that investment, he could not prove to parliament that the Channel Tunnel was constructable. By 1875, it had been clear to Watkin that if he wished to see the completion of the scheme, and a return on his investment, he would have to secure private sector confidence and capital above all else. By 1880, the fragmented concession and absence of public funding left SERC in a position from which it had little choice but to pursue its drive to mid-channel, violating forbidden seabed beyond the foreshore and breaching the limits of the law.

Chapter 4

The Channel Tunnel and the Problem of Financing

In 1876, with the conclusion of a draft treaty on the Channel Tunnel, Britain's government had agreed with the French on a basic framework of cooperation, but the British promoters had no financial commitment from the private sector in that country, nor had they a complete concession. The French promoters, meanwhile, had both. As in Britain, the French tunnellers received no public financing, but their government's contribution to establishing feasibility helped to gain the support of French business. The French government took a more active role in creating and upgrading rail services than its British counterpart. Paris had laid down a comprehensive administrative blueprint in a statute of 1842 which clearly defined the roles to be played by both sectors. This framework covered all economic and technical aspects of rail transport both for construction and operation. Moreover, the same plan was to be followed for most schemes. [103]

Furthermore, the French authorities granted one

complete concession directly to each railway company, spelling out all obligations and conditions. To guard against the permanent monopoly of a line, sanctions were then awarded for a 99 year period after which time all assets and running rights were subject to compulsory state purchase.[104] The French also developed a national system of territorial jurisdictions in which these monopolies were granted to one railway in each district to discourage over-speculation and waste.[105] In the case of the Channel Tunnel, the French promoters were given neither government grants nor guarantees on loan interest and not more than 30 years of concessions. However, the comprehensive nature of French concession laws, along with public reports on technical matters, calculation of fares, and French business support probably went a long way to attract private investors.

The British, on the other hand, had no central authority for regulating the harmful effects of contract concessions, or monopoly ownership. This posed a difficulty for Her Majesty's Government: they wanted to grant British promoters the liberty to risk their capital, but not if the government was tied to concessionary agreements, the consequences of which

were unknown. The government wanted the concessions to British firms to entail the same advantages as their counterparts in France, but not if it meant giving promoters a 30 year term of nearly unconditional monopoly as the French firms had been given.

London's solution was to draft French-style concessions to each English company as two acts of Parliament, one for the experimental stage, the other for the building phase in case the goverment needed more time to sort out domestic matters such as defence before giving clearance for construction. In addition, British legislators probably recognised that if the companies' monopoly powers were granted in an act of parliament, they could be amended by a subsequent act if they came to threaten the public good. This arrangement allowed Her Majesty's Government to grant concessions to the British promoters based "upon the usual terms granted to a public Company in France. . ." However this was only possible, provided there were "reasonable limits" and "conditions" to those concessionary features common to French practice, but which were foreign to British legislation. These features included the "purchase of the undertaking by the respective Governments" and the

allowance of a monopoly, which in Britain could prove "injurious to the public." [186]

Three executive or cabinet departments were involved in coordinating the adoption of the French principles. The Board of Trade had the task of advising the English companies and the government on all legal questions related to the concession. The Foreign Office was charged with coordinating all British correspondence with the French government for preparing the international tunnel treaty. The actions of the Board of Trade and Foreign Office were overseen by the Treasury in order to uphold government interests.

In February of 1875, the British bill was ready to be introduced to parliament. The Lord of the Treasury recommended that a small joint committee from both countries be appointed to decide on the international legal matters. The Treasury recognised that neither government could grant concessions to the companies within its borders until the other country gave its opinions on the project, and that the international ownership and operation of the tunnel, dictated that the conditions agreed upon had to be the same in both concessions. [187] The Treasury thought "it

necessary to impose some preliminary conditions upon the promoters [through a code of regulations], in order to protect the interests of the public. . ." A bilateral commission was needed because the Treasury "do not feel able to settle these conditions without first ascertaining clearly what conditions are to be imposed by the Government of France."[188] To meet these ends, the Treasury recommended and helped create the Anglo-French treaty commission, whose task was to synchronise French and British objectives. But while the commission succeeded in finding common ground on the issues of monopoly ownership and public purchase, it stopped short of achieving a common set of rules for granting concessions. The latter were to be left to the legal parameters of each system.

But the Treasury did not get the chance to readdress this problem. By February 1875, the authorities in Paris were satisfied with the results of their feasibility investigations and wanted tunnelling to begin as soon as the French construction bill was passed. In their eagerness, the French forced the two countries to enact their separate pieces of legislation before the differences were ironed out. The French

lower assembly resolved in July that the Channel Tunnel Bill was urgent business in France; at the same time, pressure was being applied to the Board of Trade by the British promoters of the Bill as to the financial "hardships of further delaying the progress through Parliament. . ." [109] Paris suggested that rather than stalling the work, a special clause should be entered into both bills obligating the companies "beforehand to conform to such regulations as might be prescribed thereafter by the two governments." [110] Lord Lyons, the British Ambassador to France, expressed reservation to this, questioning its conformity with England law since the "procedure with regard to Bills of this kind was so entirely different in the two countries. . ." [111]

A comparison of the French and British concessionary measures illuminates an asymmetry of the two procedures. Whereas the French had concluded with their promoters, what might be best described as a contract for the construction of a complete tunnel, the British promoters were limited to experimentation, could not disturb the seabed beyond the foreshore, and were bound to any conditions the state might impose in the future.

The divergence of the concessions is written into

the British and French Channel Tunnel acts. In the French, we read in article four that the tunnel company has permission to construct a "chemin de fer . . . a la rencontre d'un pareil chemin de la cote Anglaise dans la direction du littoral francais." [112]

In the British act we read in the preamble that:

> . . .the company should be empowered to purchase and take certain lands, houses, and buildings at the foot of the Cliff in St. Margaret's Bay. . . and including the beach and foreshore abutting on the said lands.

Then in article five it clarifies that:

> . . .the passing of this act shall not be deemed to give to the Company any right to claim other than the title or the lands laid out in the preamble.

Finally, article nine makes no mistake about the document's intent:

> Nothing contained in this Act shall authorise the Company to take use, tunnel under, or in any manner interfere with any portion of the shore or bed of the sea or of any river, channel, creek or estuary . . . without the previous consent in writing of the Board of Trade. [113]

Although the international commission was still investigating the legal problems, the bills were passed

in both countries on August 2, 1875, almost a year before the Joint Committee submitted its report. Ironically, the Joint Committee's report summed up the nature of the differences in the two acts, specifically on the concessions. It states that:

> . . .the French measure [was] a definite concession to the promoters of the proposed Railway of the right to make a tunnel towards England provided certain conditions were fulfilled, while the English Act of Parliament merely authorised the CTC to acquire lands at St. Margaret's Bay and carry out such operations as might be authorised under the proviso that the company should be bound by any conditions which might afterwards be imposed, in consequence of negotiations with the French government. [114]

These dissimilarities were also apparent in clause two of the 1876 draft treaty. Clause two declares that the French portion of the tunnel would be:

> constructed, maintained and worked in conformity with the French laws, and with that of the [French Act and] subject to the provisions of the Treaty to be concluded between the two governments.

Meanwhile, it was agreed that the British section of the tunnel was to be constructed:

> . . .in accordance with such conditions

> as Her Majesty by Order in Council hereafter impose in connection with the undertaking of the said company [the Channel Tunnel Company]. . .with such, if any modifications as may hereafter be made by Act of Parliament. [115]

In France, private financial assistance placed the tunnel promoters in a position to begin construction in 1875. There had never been questions raised as to whether corporate funding would be forthcoming because the enthusiasm of France's business sector was never in doubt. This has been attributed to the support of those French trade interests who depended on cross-Channel commerce. [116] The French government was further able to promote private confidence in the scheme by consulting seventy-three Chambers of Commerce throughout France, all of whom recognised the usefulness of the work, thus involving the approval of a broad spectrum of France's business community in the concessions to the French promoters. A typical example of French government support is a piece of correspondence from January 1875 describing the realisation of the proposed Channel Tunnel as "la manifestation la plus eclatante du genie industriel de notre epoque. . ." [117] In short,

public confidence in the tunnel idea had attracted private capital: state endorsement of the scheme's technical and commercial viability had convinced French investors that a tunnel could be completed, and that it would be profitable.

Private financing was the exclusive method for raising railway capital in nineteenth century Britain (outside Ireland) because of the belief in competition as an effective regulator, despite evidence to the contrary. Funding for railways was supplied by local investors, and joint-stock companies. Competition from roads, canals and seaports was expected to prevent railway companies from constructing useless routes, thus reducing the need for public expenditure.[118]

By the middle of the nineteenth century, parliamentary enquiries reported many economic advantages to private investment and regulative competition. The 1867 Royal Commission on Railways cited the belief among English legislators that the public ownership of railways in their country, in whole or in part, would lower the standard of services as well as inhibiting the development of future schemes. The

Royal Commission suggested that in terms of new development:

> Either proposals for new lines would be discouraged by the Government as tending to diminish the revenue; or, if this consideration were disregarded, schemes might be devised for new lines, so as to leave those existing a charge upon the State." [119]

The combination of private finance and competition meant that the state did not help to promote railway schemes. Notwithstanding traditions, the Board of Trade had originally recommended in 1869 that that the Channel Tunnel scheme was not feasible without government assistance. The Board's Captain Tyler reported to his department:

> . . .if any [cross-channel] schemes should hereafter be carried out in practice, they could not go forward otherwise than under the supervision of, and a previous guarantee from, the two governments. [120]

Three years later, the Board of Trade and Foreign Office agreed that financial difficulties would still be formidable especially with no government assistance. Lord Granville, the Foreign Secretary made this view known to Paris, writing that as the required

construction time was ten years and the projected cost was L10,000,000:

> it appears to be at least doubtful whether any traffic which might pass through the tunnel would be sufficient to make this outlay profitable; and it seems questionable whether the enterprise could be executed at all without pecuniary assistance from the governments of the countries interested. [121]

But as the British government gave the scheme more serious consideration, it eventually overturned Tyler's original assessment. By the end of 1874, the British authorities would not give their opinions as to the scheme's financial or physical feasibility. This was probably so that the government would not be bound to any concessions it granted. It was not prepared to compensate the companies in the event of financial shortfalls due to poor market conditions or the government's blockage of the tunnel due to war. The Board of Trade had also forgotten its previous endorsement of the tunnel's economic possibilities. In the same year, the Board of Trade wrote that considering the large capital outlay and the competition of marine traffic, the Board could not "take a very sanguine view" about the prospect of the tunnel earning a return. But, it continued, "so

long as the Government is not asked for money [this] is a matter for the promoters rather than for them." [122] In effect, the Board of Trade was informing England's tunnel companies that no advice would be forthcoming from government experts and that no form of loan or subsidy would be issued from public coffers.

Later that year the Earl of Derby of the Foreign Office made this official British policy when he told the French that:

> As to the physical probability of the undertaking being completed, or as to its probable financial success, Her Majesty's Government will not offer an opinion; but on this latter point it will be for the promoters to weigh well all the consideration of the large sum that will be required for this work, and of the competition by sea as regards the carriage of merchandise, if not of passengers, which must always be expected to exist. [123]

With public sector subsidies out of the question in England, by 1874, it was up to the tunnel promoters to secure their own capital, but this prospect was beginning to look bleak as well. Although the French seemed to be faring well in the area of funding, owing to loans from the Rothschilds, the English companies could not come up with the the necessary money

to start the experimental borings. This caused uneasiness among Chevalier and his associates in France since they could not commit themselves to a contract with either of the British firms until one of them had completed the preliminary work. The terms of agreement between Chevalier's company and the French government ruled that if no contract was ratified between the French and British contractors within five years (by 1880), no more than three more years worth of concessions would be granted.

In fact, AFSR had little or no capital forthcoming, while CTC had only L15,000 by 1876. [124] Because the scientific experiments were still inconclusive, neither British company could rely on private investors to buy shares. An additional problem was that fierce corporate competition in Kent between London Chatham and Dover Railway (LCDR) and South Eastern Railway (SERC) destroyed any chance for financial cooperation between the two railways. The feud over Continental traffic had begun when LCDR extended its rails to the Dover Priory in 1861. SERC had attained the Admiralty Pier at Dover in 1859. The rivalry was heightened now by the prospect of a fixed link to France,

meeting up with the lines of both companies. A Channel Tunnel Company Act of 1874 enabled both firms to invest up to L20,000 each to prepare a shaft site for the tunnel. In 1875, they each received correspondence from Chemin de Fer Nationale in France, advising them each to put an equal sum toward this end. SERC agreed to invest the full L 20,000, only if LCDR matched this figure. LCDR, however, was only prepared to lay out an amount "in proportion to receipts on Continental traffic." [125] This was met by a refusal from the chairman of SERC and was only one of a number of disagreements that led to a breakdown in the LCDR-SERC tunnel talks. The stalemate in the discussions between the two companies led to SERC withdrawing from the project for the rest of the decade. This meant that CTC would have to finance the entire scheme alone. This would prove an impossible task. In 1880, it was still searching for private investors.

The problem of finance was compounded by the fact that in 1875, the promoters had only a limited concession: they could only conduct experiments within the landward boundary of the foreshore. The scheme's unusually high cost, and construction time along with

its perplexing engineering and legal aspects, complicated the task of attracting private sector investment. The end of 1875 found the promoters trapped between a skeptical business community, and an inability to demonstrate the tunnel's engineering merits because of a lack of capital and a limited concession. They faced the dilemma that private sector confidence was needed in order to secure capital; but without public money, they could not finish the scientific experiments: a precondition for private sector confidence. [126]

In April 1875, the Board of Trade interviewed representatives of English railway companies connected with the tunnel. They asked J.S. Forbes, Chairman of the London Chatham and Dover Railway how the lack of a complete concession would affect the promoters. His response was a comprehensive concession such as the French had might not be suitable for the British firms because that would require a confirmation of private backing and, as he stated it, "I don't think you will get anybody connected with the Commercial world to move in the matter until these preliminary [scientific] trials are carried out." [127] Later Forbes said that the strategy of the CTC tunnellers was that after his

engineers had completed all experiments, he would publicise the results in order to secure financing. 128

Sir Edward Watkin of the South Eastern Railway Company, however, was concerned that if railway companies expended all their available resources on experiments while failing to impress the business community on the tunnel as a profit-making venture, construction would never get off the ground. During the Board of Trade's interviews, one of Watkin's agents implied that if private money proved difficult to secure, then public funding would be necessary for the scheme's completion:

> For although the Board may entirely sympathise with those who consider that the tunnel work is practicable, this idea does not exist generally in the minds of the class of persons who follow from the proprietary bodies of railways. [129]

Watkin's spokesperson also referred to the project's expense and its long time frame for construction as being a investment liability to speculators:

> It seems obvious. . .that the risk of so large a work and the accumulation of interest on dead capital during construction would deter private corporations with limited capital and income from venturing upon such a risk. [130]

In 1875, Sir Edward Watkin of SERC was not yet an active participant in the scheme but he devised a hypothetical strategy for financing the tunnel. He reasoned that even if the tunnel companies raised enough equity for the successful completion of preliminary experiments, prospective shareholders would be unlikely to invest in the tunnel until it could be proved conclusively that a tunnel could be bored, that is, an actual demonstration (the boring of a complete test tunnel). Watkin assumed that if he were involved, he would have no difficulty getting money for experiments from South Eastern shareholders, but he was uncertain as to how he would pay for the actual tunnel.

Sir Edward's financial strategy was an illicit plan which entailed promoting the sale of shares while construction of the entire British half of the tunnel was undertaken. But it constituted the deliberate disregard for the terms of his own private act of parliament, and he had to make his actions public knowledge in order to impress prospective investors with his proposed drive for the middle of the channel. The illegal aspects of his plan centered upon the thorny question of the fragmented concession. The government's

definition of 'experiment' did not include the boring of a complete driftway. Watkin first articulated his views to the government in the British Channel Tunnel Commission of 1875. Watkin's proposals were exactly opposite those of J.S. Forbes, Chairman of LCDR whose lines were then scheduled to be linked with CTC's tunnel work.

SERC director Edward Watkin himself came to the Channel Tunnel Commission hearings on May 10. While giving evidence, he made clear his opinion that the construction schedule proposed by the Channel Tunnel Company was unsuitable to the task. According to CTC's engineers, the whole project was to be divided into three stages: the preliminary geological experiments, the preliminary test bores inside the foreshore, and finally, the driving of the tunnel to France. This was the timetable envisaged by the Board of Trade and eventually agreed upon in CTC's private act.

Watkin's proposed schedule also fell into three stages, but while the first was devoted to preliminary geological experiments, the second stage involved boring a test tunnel straight through to the Continent and the third was for boring the full-scale tunnel. Watkin's

strategy can be best summarised with the testimony he gave to Channel Tunnel Commission Chairman Tyler (also of the Board of Trade) on May 10, 1875.

> Tyler: Mr. Forbes (LCDR) has very properly divided the undertaking into three stages. Your difficulty commences with the second stage?
>
> Watkin: I think that the first stage is finished, and that a part of the second stage is finished, because I think that the borings and examinations which have been conducted by Sir John Hawkshaw, and Mr. Brassey , and Mr. Whythes, have actually resolved almost everything that we want to know prior to experimental works. Then in the second stage, which means the actual sinking and driving of the driftway, I think we may see our way to making those experiments.
>
> Tyler: The second stage is completing the driftway right through?
>
> Watkin: Then we may begin to have a little difference. Sir John Hawkshaw does not think it necessary to drive a gallery right through, but I do, for this reason, that if you are going to get the money from the public, I have no doubt that the public would provide the money for a tunnel, if they knew that there was a small tunnel there before, and they knew the thing could be done. I can see my way to getting the money for a mile on each side, but as to getting right through, it is another question, because the money which would be required would make the whole difference, and I cannot see my way clear to getting the money out of any joint stock organisation, or any organisation which I can see. I do not mean at all to say that we should do nothing because we cannot see our way to do everything. I do not see that that is sensible. I think that we should make our experiments whatever the future may be. . . . .the people to whom I have talked in the Chemin de Fer

du Nord, and the Rothchilds and all, believe that they will get the money for one half of the work. I do not believe that in England we could get the money until we had driven the driftway all through, so as to demonstrate it altogether. Driving a mile on each side would prove it to my mind but perhaps it would not prove it to the investing people in England, who know very little of tunnels.. . . .I do not myself believe that we should get the money for the tunnel from the public unless we had made a driftway right through at somebody's expense. Then [my] idea . . . was that the two governments should be at the cost of the driftway, because we thought that then the public would come in and make it into a tunnel. If the driftway answers, it is no serious matter. [131]

Chapter 5

The Foreshore, the Board of Trade and Government Intervention

When Sir Edward Watkin made his bid to drive an experimental tunnel to France in 1881, he was really implementing his plans for raising money. After the passage of his construction bill in 1880, Watkin wanted the test-tunnel to be completed as soon as possible; it was to be a demonstration to potential investors by way of engineering feasibility with emphasis on cost effectiveness, certainty and speed of completion. [132]

And there was no time to waste: August 2, 1883, was the deadline within which the British companies could abandon their concession and the project "without the [French] Company being entitled to raise any objection or to lay claim to any indemnity." [133] By 1880, it must have been clear to Watkin that to avoid costly lawsuits, he had to know soon whether the tunnel was viable in the financial sense, to permit him, if necessary, to quit the concession and any agreements made with France before that date.

The boring of the test-tunnel was begun sometime in

1880, and in August of 1880, Chamberlain was informed by the Coastguard Inspectorate that SERC was "just below high-water mark", (that is, at the shallow border of the foreshore region).[134] Since SERC's private act for experiments restricted its activity to outside the high-water mark, Chamberlain wanted to monitor the company's progress. But in September 1880, SERC surprised the Board with the declaration that the foreshore area was not Crown property at all but belonged instead to a private landowner, Major Lawes, who owned the land where SERC's shaft headings were situated as well as the adjacent foreshore.[135] The Board spent the next few weeks contacting the Office of Woods and Forests to find out if the claim could be substantiated. Woods and Forests replied that they knew of no such claim.

Evidently, the Board of Trade assumed that SERC stopped its push toward the foreshore in October 1880; there is no further correspondence between the Board and SERC until June 1881, when Watkin announced at a South Eastern board meeting on about the fifteenth, that a single test tunnel could be bored through to France in five years.[137] The prospect that Folkestone and Sangatte might be connected with a seven foot diameter

experimental tunnel within five years with or without Her Majesty's clearance was a serious matter for the foreshore's guardian, Board of Trade Chairman Joseph Chamberlain. On June 25, the Board recontacted SERC to ascertain whether the tunnel was at the high-water mark and asked to see the company's "plan. . .showing the extent and nature of the operations." [138]

It is unclear whether Chamberlain's next move was intended to protect the nation's security or the integrity of his office. On July 5, Chamberlain brought Watkin's statement to the notice of the War Office and the Admiralty, asking for representatives to form a departmental committee with the Board of Trade "in order to consider what steps, if any, should, under present circumstances be taken by Her Majesty's Government." [139] Chamberlain reiterated his concerns in a letter of August 11 to the Admiralty:

> [The Board of Trade] find the work of forming a subway under the Channel is making considerable progress and that they may be asked at any time to sanction the extension of the subway under the sea. . . . It is on this account, and also owing to public susceptibility having aroused as to the possible danger to this country from a tunnel under the Channel that

> the Board of Trade desire to be fortified with the opinion of the military and naval authorities. . . ." [140]

Both offices accepted the invitation, and the Board of Trade's Committee on the Channel Tunnel was appointed on August 19.

Sometime during the next six months, Chamberlain must have realised that his committee had no authority to stop SERC's activity. Therefore, after the committee had conducted interviews and had reviewed all relevant correspondence, Chamberlain suggested to the War Office on February 3, 1882, that any questions related to national security needed to be "settled on the responsibility of the Government as a whole." [141] The developments of 1881 and 1882 indicate that in fact the Board was not empowered to bring a halt to SERC's borings. SERC continued boring through the foreshore until well into August of 1882 and the construction bill for SERC's tunnel made it through a first reading but was postponed from parliament's schedule in February of 1883. [142] There are two more significant reasons why Chamberlain had the tunnel question addressed at the joint committee level. First, Chamberlain may have been uncertain of the government's legal claim to the seabed below the

tidewater. Second, Prime Minister Gladstone was a supporter of the tunnel project.

As to legal claims, Watkin had insisted in 1881, that the land into which SERC was boring, including the foreshore, was originally granted by parliament to a third party and that the third party sold the land to SERC. [143] It is impossible to know how precisely Chamberlain understood the grounds of Watkin's contention, but in 1882, a professional legal publication, the Law Journal was to attest that Watkin's claim might not have been unjustified. The journal disputed the clarity of the Crown's authority to prevent the company from boring under the foreshore. It suggested that while the "Government ought to have full control over the operations", this was one area where neither the Crown nor parliament possessed clearly defined powers, "and it is a serious question whether an act of Parliament ought not to be passed in preference of relying on a doubtful prerogative." [144]

There was also some confusion within the government as to which cabinet office exercised legal control over these lands. While the Board of Trade claimed their authority from an 1867 parliamentary committee ruling,

they understood that the Office of Woods and Forests could declare the same under section 21 of the Crown Lands Act, 1866. [145] Watkin was quick to observe this "conflicting authority" [146] after Woods and Forests wrote to SERC, in July of 1881, warning the company that it could not bore beyond the low water-mark (the seaward foreshore boundary) without a ". . .license from this Department. . ." In addition, Woods and Forests suggested that if SERC's construction bill were passed, the Office would make an agreement with SERC on the conditions under which a tunnel could be driven. [147] When Chamberlain was informed of this he dispatched a letter to the Treasury, condemning Woods and Forests' actions, adding:

> Whatever the legal rights of [Woods and Forests] under the 21st section of the Crown Lands Act, 1866, may be, it would appear that the question with the Railway Company ought not to be settled on those grounds only. . .and if it is not too late, it is desirable to have this point settled by the [construction] Bill now before Parliament . . . .[or] at once by Her Majesty's Government." [148]

Chamberlain's only legal weapon against SERC was the power of parliament to amend the contents of the company's act for experiments. SERC planned to begin

the second phase of the tunnel by boring under the foreshore and on to France, thereby circumventing the procedure of getting passage of a construction bill through Parliament, which had not yet been done. The Board asked the Treasury about this issue and the latter agreed with Chamberlain on two salient points. First, the Treasury conferred that the question needed to be settled by the government in its collective capacity rather than by conflicting "Departments of the State."[149] Secondly, the Board of Trade and Treasury agreed that that SERC appeared to be violating its act of powers which allowed for experiments only. In fact the Board of Trade and Treasury had already taken measures to prevent any attempt by SERC to get around parliamentary checks. Sometime in 1881, they added a section (37) to SERC's act of experimental permission. In the Treasury's letter of July 22, 1881 to the Board, it mentions:

> . . .the limit imposed on the powers of the Railway Company by section 37 on their Bill. Prima facie, [the Treasury] doubt very much whether a driftway, at least 7 feet in diameter, crossing the Channel (which they learn, from the ordinary channels of information, to be contemplated), does not fall within the definition of 'a tunnel between England and France,' referred to in section 37, rather than 'experimental

> borings and other works in connection with the construction of a tunnel under the English Channel', sanctioned by section 35 of the Bill. If this be so, it would appear that the Railway Company may be indirectly avoiding the explicit authority of Parliament for a tunnel between England and France, a point which is almost the only definite conclusion to be drawn from the correspondence and negotiations of 1875 and 1876, and the importance of which was recognised in the correspondence for this year between your department and this Board, which led to the insertion in the Bill of what is now clause 37.'[150]

There was a further cause for Chamberlain's request for a joint committee on the Channel Tunnel. Prime Minister Gladstone wanted to see the tunnel completed. During the heated exchanges in 1882 and 1883 between the tunnel's advocates and critics, Gladstone endeavored to remain neutral. The prime minister's official neutrality and private support for the tunnel was possibly due to his strong belief in free-trade and European cooperation co-existing with his knowledge that an important section of national opinion was opposed to the scheme.[151] Another plausible reason for Gladstone's aquiescence was simply that he had not been present at the Board of Trade's negotiations and knew little about their nature. Thus he had to accept the Board's advice that there was not yet enough information

on several key issues, such as defence, with which to decide for or against the continuation of experiments. Whatever his motivation, Gladstone took an ambiguous position, hinting in public statements that he favoured continuation. The prime minister was surprised at the new twist to the tunnel question in 1882; in February of that year he told the Commons that "when Her Majesty's Government came into Office, and, indeed until lately, this question appeared to present the aspect of a settled matter." [152] And at around the same time remarked that "it is not so much that I am in favour of the tunnel as that I am opposed to the opponents of it." [153]

It was only after the abandonment, that Gladstone was openly to lament the tunnel's demise saying that:

> A factious opinion which is sometimes assumed to be national opinion was too strong against it at one period; it was too strong for me. . . . [154]

Due to anti-tunnel sentiment in the military and within his own cabinet, Gladstone was reluctant to take action favouring the promoters. Conversely, he did not approach the French to back out of the tunnel treaty, which, on the pretext of national security, may have been tantamount to diplomatic effrontery. [155] In April 1883,

When Chamberlain produced the order in the Commons to set up the joint committee Conservative Members of Parliament insisted that the government state their position so the tunnel question could be debated and they blamed Gladstone's indecision. Edward Stanhope accused the government of shunning the issue:

> . . .because it was hopelessly divided in itself, and could not offer an unanimous opinion to the House. They all knew perfectly well the opinion of certain Members of the Government with regard to the question. There was the Secretary to Treasury who flirted with it, and connected himself with a public Company for the promotion of the Tunnel. [156]

Now that the government was unable to give parliament its opinion on whether or not the tunnel should be continued, Gladstone must have seen the Board of Trade's suggestion of a Joint Committee as a perfect opportunity to rid the executive of its responsibility. This, at least, was how the government's parliamentary critics interpreted the transfer of authority to the legislative branch. In opposing the creation of the 1882 Joint Committee some civilian Members of Parliament demonstrated their belief that the government should take responsibility for its own decisions: that if the government was to abandon the tunnel, it should be the

result of its own changes in policy. Their argument had nothing to do with the condition of British defences, but rather with the fact that Britain was committed to an international agreement, which many members did not regard as parliament's problem. Critics of the joint committee argued that the question of whether to sanction the tunnel was one which the government had to bear alone and that it should make its position clear so that "Parliament", as one Commons member put it, should be "consulted as a whole, and that these matters shall not be referred to a Committee which is to take off the responsibility of the Government and throw it on the House." [157] Several members of the House of Lords including Lord Salisbury, shared the view that the Government was unloading its obligations on the joint committee, setting it up as an "obstinate and disagreeable" business partner, in order to save itself the embarrassment of having to back out of an international agreement. [158] In the Commons, Sir Asshton Cross suggested that on questions of international policy "it should not be left to a Committee to decide what is essentially a question for the Government of the day." [159]

If Conservative accusations were correct, then the joint committee had its desired effect for the Liberals. The fate of the proposed Channel Tunnel was decided neither by the Cabinet nor by parliamentary debate. The fulcrum of the arguments given by most committee members rested on the fear that Britain was not prepared to fend off an invasion by France through a fixed link and that no economic advantages provided by the tunnel would compensate for this vulnerability. The committee heard testimony from several military professionals, most of whom voiced reservations about a fixed-link because of Britain's modest terrene home-defence system and her heavy reliance on the navy as the bulwark against invasion. The details of the Joint Committee's findings are not essential but they should be summarised. Apart from the government's defence experts, the Committee took evidence from the promoters themselves and from engineers, both civil and military. The minutes were then reviewed by ten neutral representatives, five from each House. The fate of the tunnel rested on their assessments. Of these ten judges, only one argued in favour of the tunnel. The Marquess of Lansdowne refuted all the military fears and

praised the tunnel as a boon to British trade. The remaining nine were sympathetic to the anxieties of the military opponents and restated these objections in their appraisals. They argued that if a hostile force were to gain possession of both ends of the tunnel, Britain would be in an intolerable defensive position. Also, if no declaration of war were made by the attackers, the advantage of surprise would afford an important advantage to a tunnel-borne invasion force [160], rendering useless Britain's mainstay of home defence, her naval barrier. They argued that Britain's line of defence would depend on the destruction of the tunnel by mines and explosives which were subject to mechanical failure or sabotage in the event of an invasion. They feared that the authorities delay destroying the tunnel until the last moment, this having historical precedent in the case of the Vosques Tunnels in the Franco-Prussian War. This resulted in the French tunnels being captured intact. [161] They the envisioned the British public pressuring the government to remove the explosives or simply avoid using the system due to that hazard. [162] And finally they insisted that the cost of building and maintaining defensive works and its

garrisons at the tunnel mouth would undercut any profit to be made by its provision for expanded commerce.[163]

The importance of these Joint Committee discussions on economic viability for our purposes is not to show that the claims of one side were more reasonable than the other, since both made claims that were questionable due to a lack of solid evidence.[164] It is important, however, to demonstrate that the traditional arguments about the tunnel's commercial advantages were now being attacked for the first time by many of the nation's leaders.

When the opinions of the joint committee began reaching the press in 1882, they unleashed a backlash of castigations against the tunnel on the very subjects of the tunnel that the committee was addressing: strategic vulnerability and economic viability. Now the majority of defence pundits were condemning the Channel Tunnel as nothing more than a selfish gain for entrepreneurs at the expense of national security.[165] The national publication Nineteenth Century attacked those Members of Parliament, like Grosvenor, Brabourne and Watkin, who

had financial stakes in the scheme:

> The Public has no locus standi as opponents to a private bill. . .for guarding itself from the Parliamentary attacks of commercial spectators. . . .No businesslike attempt has yet been made by the promoters to show how, and how much, the trade of the country is to be improved. . . .and were [the advantages] clear, the projectors, as businessmen would surely put them forward, rather, than declaim about 'universal brotherhood' as an inducement to shareholders. [166]

Another critic, contributing to the same journal also denied that many commercial advantages would result from the tunnel's construction:

> . . .though it places me among those whom Sir Edward Watkin charges with 'ignorance and littleness' - ignorance in not viewing the scheme as he, the chairman of the Tunnel Company, views it, and littleness in not holding the balance as he holds it between the gains of private speculators and the interests of the nation. [167]

The general skepticism voiced in the press against the tunnel circulated new doubts as to the wisdom of the nation taking on a possible security breach which had little chance of giving up remunerative compensation. The "commercial advantages", noted the 1883 edition of Annual Review:

> . . .were so palpably overstated, that a very general distrust as the objects

> of the promoters of the scheme grew up, discrediting even those who advocated its adoption on the ground of drawing more close the bonds of union between England and the Continent of Europe. [168]

Notwithstanding Chamberlain's genuine intentions, the joint committee awakened old anxieties in some quarters of England's military establishment. For example, the most vociferous of high-ranking career soldiers on the short-comings of army reforms in the 1870's, General Garnet Wolseley, was also the most adamant critic of the tunnel as a window of vulnerability. Wolseley was one of the few late Victorian commanders who held that the abolition of purchase in the 1870's had not resolved the underlying cause of military ineptitude: the want of professional training. [169] In his memorandum to the Joint Committee of 1882-3, Wolseley's central argument was that the only factor protecting Britain from foreign invasion was "our 'silver streak.'" He also emphasised what he saw as the social implications arising from a fixed-link: it "would place us under those same conditions that have forced the powers of Europe to submit to universal service." [170]

But despite his apprehensions about Britain's land

forces, Wolseley failed to raise the alarm on the subject of the tunnel until the meeting of the Channel Tunnel committees. Another harsh critic of the British military in the 1870's, who chose not to speak out against the tunnel until 1882 was Lord Dunsany of the Royal Navy. Dunsany became also one of the military's leading opponents of the Channel Tunnel scheme and contributed an article to The Nineteenth Century in which he quoted Wolseley's memorandum verbatim. In introducing Wolseley's work, Dunsany warned his readers that Britain's navy was not at its traditional strength, presumably, stronger than the next two foreign fleets. At the end of the article, Dunsany took the opportunity to stress the danger Britain faced in the loss of her supremacy at sea. A greater danger, he cautioned, lay in the British public's failure to recognise this turn of events, and compounding the hazard with the construction of a Channel Tunnel. "The confidence in our silver streak, which was once a true creed", he wrote, "has become a superstition." [171]

In an article published in the same periodical less than a year earlier, Lord Dunsany had made a similar argument, with more detail to naval logistics. In

"The 'Silver Steak'", Dunsany claimed that Britain's false security in the Channel and the navy would leave the country open to devastating consequences in the event of a French combined land and sea invasion. Remarkably, the article was published in May 1881, but there was no mention of the Channel Tunnel's strategic significance even at that late date. This indicates that even the harshest critics of Britain's defence system were not concerned about the tunnel until the Board of Trade invited the War and Navy offices to participate in its departmental committee in late 1881.

There are two possible reasons for this: both relate to parliament's failure to commit itself to the tunnel in the 1870's. The first has already been dealt with: perhaps the military knew that the government had plans to investigate the defence side of the Channel Tunnel before parliament passed the bills for construction. Therefore, the military would have felt certain that no tunnel would be bored before strategic requirements had been fulfilled. The second arose out of the aforementioned inability of the Board of Trade to make estimates on the tunnel's technical viability. The

military interpreted this as conclusive scientific evidence showing that the tunnel was not feasible. In an 1882 attack against the tunnel promoters, Admiral Dunsany wrote in Nineteenth Century that nobody had opposed the tunnel in 1874, including the military, because:

> The Tunnel Scheme was then a new one. . . .Nothing in fact could evidence the practicability of a submarine tunnel [other than] some actual borings in the locality, and at that time, none had been made. [172]

All of this gave the military little reason to question the military aspects of the tunnel earlier than 1882. The military's shock in 1882 at the fact that tunnel borings had been started were summarised in the words of one officer at the Admiralty who remarked on the sudden timeliness of the tunnel's defence question:

> I have noted with much surprise and regret that the proposal to construct a tunnel . . . [is] becoming a reality, and that operations with this object have commenced. . . . [173]

At the end of the day, the most prevalent cause of the abandonment of the first attempt to connect England and France with an undersea railway was the apparent

inability of the public and private sectors to communicate their interests. This included problems of articulation between the government and tunnel companies, between the tunnel companies and their prospective investors in the business community, and between the authorities in both countries and within Britain. During the 1870's, neither the Channel Tunnel Company nor the South Eastern were vociferous about their financial dilemmas when in conference with the state authorities. Watkin voiced his funding concerns in 1875 before he had become an active participant in the project and his views probably came across as little more than idle speculation.

However, most of the blame on the count of miscommunication lay with the British government, and their unwillingness to commit. They should have been more responsive to the financial dire straights in which the tunnel companies found themselves from the start, and should have implemented special legislation to deal with these problems. However, the ideology surrounding free-trade and *laissez-faire* contributed to the government's approval of the tunnel, based on a policy of rhetoric rather than a realistic assessment of

economic and military realities. The dependency of railway law on the ad hoc scrutiny of parliamentary committees made for a dearth of cabinet leadership in all aspects of logistical and financial trouble-shooting, while giving hopelessly limited concessions to English companies. The British decision to pass the bill for experiments, without fully considering the tunnel's utility, presented France with false, if vague impressions of its full commitment.

Ironically, it was the executive's general commitment to free-trade that paved way for the tunnel's approval, but the same executive endowed itself with few powers to examine the scheme critically, with all its apparent dangers. To compensate for this deficiency, the authorities monitored the companies' actions through a parliamentary mechanism, the gradual sanctioning process which preserved the currency of the defence question in Britain, while dismissing it to the backstage pending the international commission's treaty negotiations. This practice awarded Whitehall the luxury of pursuing - in the 1870's - those features of the tunnel involving the treaty and concessions only.

This practice had consequences still farther

afield. It was crucial to the military's false sense of security down to 1882 and the Board of Trade's actions which forced the defence issue to the fore. Of greater irony was Chamberlain's insistence that the defence problem be addressed began as a bid on his part, to carry out the legal responsibilities of his office. If the military brass of Great Britain of Wolseley's day are to be be accused of alarmism, then Joseph Chamberlain is culpable of serving his own political ends. But this is too simplistic. Perhaps the causes of abandonment deserve further inquiry. At the very least, historians of the abandonment should consider that body of economic traditions born out of the free trade era - traditions which are themselves imperfectly understood.

FOOTNOTES

1. See Patricia Prestwich, "French Businessmen and the Channel Tunnel Project of 1913", Journal of French Studies, 1978, pp 671-715. The analogy was originally provided in A.M. Muir, et al, "The Channel Tunnel", The Geographic Journal, 1973, p 270).

2. Navailles, pp. 99-100.

3. Navailles, p. 103.

4. Deryck Abel, Channel Underground, London, 1961, p. 17.

5. Jean-Pierre Navailles, Le Tunnel Sous la Manche: Deux Siecles Pour Sauter le Pas, 1802-1987, Seyssel, 1987, p. 128.

6. Navailles, p. 98.

7. Navailles, p. 98.

8. Correlli Barnett and Humphrey Slater, The Channel Tunnel, 1958 p. 60.

9. Gostra Sandstrom, A History of Tunnelling: Underground Workings Through the Ages, London, 1963, p. 346.

10. The Times, September 11, 1873.

11. The Times, January 30, 1875.

12. Quoted in Pall Mall Gazette, Jan. 2, 1875.

13. Pall Mall Gazette, July 4, 1881.

14. Pall Mall Gazette, April 1-15, 1882.

15. A.S. Travis, Channel Tunnel: 1802-1967, Channel Tunnel Association, p. 41.

16. The Times, August 28, 1882.

17. The Times, August 28, 1882.

18. The Times, June 18; June 20; June 21, 1881.

19. Preamble to Channel Tunnel Company Ltd. Act 1875.

20. See statement of Marquess of Bath, in the House of Lords, Hansard, February 21, 1882, p 1222 vol 273.

21. Whiteside, The Tunnel Under the Channel, London, 1968 p 17; see also Mick Hamer, in "La Reve de Napoleon" who also discusses the technological problems of the 1802 design and guesses that "the war probably cost fewer lives than Mathieu-Favier's tunnel would have done." Hamer, p. 261.

22. For descriptions of tunnelling technologies leading up to, and used for, the Channel Tunnel, see Nathaniel West, Innovation and the Rise of the Tunnelling Industry, (London, 1988).

23. For reviews of the schemes see Hamer, pp 260-6; see also Illustrated London News, January 23 1855 and January 23, 1858; for excellent overviews of all schemes see Navailles, Chapter 2 and especially R.A. Ryves, The Channel Tunnel Project: A Brief History, (London, 1929).

24. Slater and Barnett, p. 16.

25. Hamer, p. 264.

26. Travis, p. 11.

27. Whiteside, p. 7.

28. Slater and Barnett, p. 24. In his 1874 Report to the French Channel Tunnel Commission, M. Krantz, Member of the National Assembly, attested to the enthusiasm surrounding the display of the tunnel design at the 1867 Exhibition. He wrote that the timing "etait heureusement choisi; on se

preoccupait beaucoup de tout ce qui pouvait faciliter le rapproachement des peuples, les travaux de l'Isthme de Suez tiraient a leur fin; ceux du Mont Cenis egalement, et le succes de ces deux grandes entreprises avait donne un entiere confiance dans les resources financieres et industrielles de notre epoque." British Sessional Papers, 1875, volume 78, page 184, document 46. Hereafter shortened to BSP 75-78-P184-D46.

29. Slater and Barnett, pp. 24-5

30. Travis, p 13; Gavin Gibbons, Trains Under the Channel, (Huddersfield, 1970) p. 16.

31. Travis, p. 13.

32. Able, p. 14.

33. See also Slater and Barnett, pp. 45-6.

34. Travis, pp. 22-3. Travis notes that one of Hawkshaw's pupils had taken samples on Hawkshaw's 1865 expedition which also indicated that the grey chalk outcrop extended further west than Day had postulated. Travis, p. 13.

35. Gibbons, p. 17.

36. Geological Results of the Channel Tunnel Site Investigations 1964-5, Institute of Geological Science, Louisiana State University, 1971, p. 10.

37. For a detailed contemporary analysis of the debate over the tunnel route, see the article by Joseph Prestwich, "Abstracts on the Geological Conditions affecting the Construction of a Tunnel between England and France" in the Proceedings of the Institution of Civil Engineers, vol. 37, 1873-4 Part 1, pp. 110-171.

38. Slater and Barnett, p. 27. The 30 year monopoly followed French law, but was adopted by Britain to align her companies' powers with the French.

39. Travis, p. 20.

40. Hawkshaw was may also have been suspicious of Brady's professional integrity. The point at which the SERC route emerged in England fed directly into SERC's Dover rail-line and away from that of LCDR.

41. Board of Trade to the Foreign Office, December 23, 1871, BSP 82-53-P11-D7

42. The Illustrated London News, January 23, 1858.

43. The Illustrated London News, January 23, 1858.

44. Francois Crouzet, The Victorian Economy, . (London, 1982) p. 105.

45. Frank Whitson Fetter, The Economist in Parliament, (Durham NC, 1980), p. 51-3.

46. Smith, Wealth of Nations, Book iv (Boston, 1909) p. 444; Quote taken from Peter Mathias, The First Industrial Nation (London, 1980) p. 267.

47. Mathias, p. 267.

48. David Thompson, Nineteenth Century England 1815-1914, (London, 1979) p. 79.

49. Whitson Fetter, pp. 52-3.

50. Thompson, p. 228.

51. Mathias, p. 230.

52. For the economic reasons behind defence cut-backs after 1815, see Edward M. Spiers, The Army and Society: 1815-1914, (London, 1980).

53. In 1857, a Parliamentary Select Committee on the Royal Military College at Sandhurst reported that at that time, while the annual expenditure on military education was L1300, Prussia was spending L26000, France L48000 and Austria no less than L127000. See Spiers, p. 152.

54. Edinburgh Review, July, 1859, p.7.

55. Gladstone, "Germany, France and England", Edinburgh Review, October 1870, vol 132 p. 554-593.

56. General Chesney, "Battle of Dorking", Blackwood's Magazine, May 1871, vol. 109, pp. 539-72.

57. Keith Robbins, The Eclipse of a Great Power, Modern Britain, 1870-1975 (Harlow, Essex, 1983), p. 26.

58. Lord Strang, Britain in World Affairs, (New York, 1961) p. 160.

59. A.H. Imlah, Economic Elements in the Pax Britannica, (New York, 1969) p. 10.

60. Quoted in Zara Steiner, "Elitism and Foreign Policy: The Foreign Office Before the Great War", in B.J.C. McKercher and D.J. Moss (ed.), Shadow and Substance in British Foreign Policy 1895-1939, (Edmonton, 1984) p. 32.

61. Donald Read, England: 1868-1914, The Age of Urban Democracy, (London, 1979) pp. 198-200.

62. Gwyn Harries-Jenkins, The Army in Victorian Society (Toronto, 1977), p. 135.

63. Jenkins, p. 3-4.

64. Pall Mall Gazette, June 1; June 3, 1875.

65. Pall Mall Gazette, January 1, 1875.

66. Robbins p. 50

67. Paul M. Kennedy, The Rise of the Anglo-German Antagonism: 1860-1914, (London, 1980), p. 38.

68. M.W. Kirby, The Decline of Britain as an Economic Power Since 1870, (London, 1981), p. 1.

69. Smith, Book 5, Chap. 1.

70. Robbins, p. 36.

71. Quote and following text from Mathias, p. 268-9.

72. See David F. Krein, The Last Palmerstonian Government: Foreign Policy, Domestic Politics and the Genesis of "Splendid Isolation", (Aimes, Iowa, 1978).

73. Admiralty to Treasury, March 5, 1875, BSP 82-53-P71-D50.

74. The four quotations in this paragraph are taken from the Report of English Tunnel Commissioners to Treasury, May 10, 1875, BSP 82-53-81-D67-I-1.

75. The Draft Treaty of 1876 appears in the Report of the Commissions for the Channel Tunnel and Railway, BSP 76-20-PP13-18 [Command 1576]. In 1874, the Board of Trade had noted that concession alignment was "important, since the works on either side, when completed, will necessarily form one work, [and] the conditions imposed by the two governments should be the same." Board of Trade to Foreign Office, Dec. 9, 1874, BSP 82-53-P36-D21.

76. The Times, January 21, January 28, 1875.

77. Foreign Office to Board of Trade, November 7, 1874 BSP 82-53-P22-D20.

78. Board of Trade to Foreign Office June 15, 1872, BSP 82-53-P16-D13.

79. Charles More, The Industrial Age: Economy and Society in Britain, 1750-1985, (Harlow, Essex, 1989), p. 146-7.

80. Henry Parris, Government and the Railways in the Ninetteenth Century, (Toronto, 1965), p. 12; JH Clapham Economic Development of France and Germany, Vol. 1, (London, 1950), p. 9.

81. L.C.A. Knowles, Industrial and Commercial Revolutions in Great Britain During the Nineteenth Century, London, 1930, p. 266.

82. W.H. Greenleaf, The British Political Tradition, (London, 1983), p. 101.

83. 1867 Royal Commission on Railways, p xvii. "Publicity" meant the publication of company rates, accidents, etc.

84. 1867 Royal Commission, p. xx.

85. Parris, p. 18-19.

86. 1867 Royal Commission, p. xx.

87. 1872 Report of the Select Committee on the Amalgamation of Railway Companies, 1872, p. vii.

88 1867 Royal Commission, p. viii..

89. Geoffery Alderman, The Railway Interest, (Leicester, 1973) p. 32.

90. Sydney Checkland, Rise of Industrial Society in England 1815-85 (London, 1964), p. 139.

91. 1867 Royal Commission, p. xi.

92. 1867 Royal Commission, p. xxx.

93. Report of 1872 Committee, p. ix.

94. Report of 1872 Committee, p. xviii. 1,800 private acts were granted to companies between 1801 and 1867 with 1,300 additional acts carrying modifications to the original acts. 1867 Royal Commission, p. 30.

95. Alderman, p. 32..

96. See P.J. Cain, "Traders versus Railways: The Genesis of the Railway and Canal Traffic Act of 1894" in Journal of Transport History, v. 2, 1973-4.

97. Economist, December 2, 1989.

98. See for example Pall Mall Gazette August 30, and September 2, 1873.

99. Other countries like France and the United States had national standards for wind stress testing. The Times, July 5, 1880.

100. Board of Trade to Foreign Office Dec. 23, 1871, BSP 82-53-P12-D7.

101. See statement of Lord Grosvenor of April 29, 1875 before the Channel Tunnel Commission at the Foreign Office, BSP 82-53-P103-D67-inc.3.

102. To the present writer's knowledge, Watkin was the first and perhaps the only railway director in nineteenth century Britain to violatate the terms of a private act of empowerment.

103. Charles Lee Raper, Railway Transportation: A History of its Economics and of its Relation to the State, (New York, 1912), pp. 63-4. The Channel Tunnel was an exception to the laws' provision that while the government was to finance the construction of rail beds and pay the costs of property acquisition, the company was to lay the track and cover maintenance and operations costs. The government at the national and local levels usually contributed about 60 percent of the necessary capital perhaps as an incentive for companies to invest under strictly regulated conditions.

104. Raper, pp. 63-4.

105. ibid, p. 21.

106. Granville to Lyons, July 23, 1873, BSP 82-53-P21-D18-Ia.

107. Board of Trade to Foreign Office, June 15, 1872, BSP 82-53-P36-D21.

108. Treasury to Undersecretary of State at the Foreign Office, Feb. 10, 1875, BSP 82-53-P62-D32.

109. Ibid, D44.

110. Ibid, D21.

111. Ibid, D13.

112. "Cahier des Charges de la Concession du Chemin de Fer Sous Marin entre la France et l'Angleterre" (Titre 1: Trace et Construction, Article 1) in "Correspondence Respecting the Proposed Channel Tunnel and Railway" BSP 75-78-P149-D2.

113. ibid, D49.

114. Report of the Commissioners for the Channel Tunnel Railway, 1876, BSP 76-20-PP13-18 [Command 1576].

115. Both quotations are from "The Draft Anglo-French Treaty of 1876 for a Channel Tunnel and Underground Railway." See Abel, p. 100-105.

116 Prestwich, p. 691.

117. The Times, January 29, 1875.

118. C.E.R. Sherrington, Economic of Railway Transport in Great Britain vol. I,(London, 1928), pp. 224-5.

119. Report of the Royal Commission on Railways, 1867.

120. Quoted from Henry Drinker, Tunnelling, Explosive Compounds and Rock Drills, (New York, 1878), p. 866, ff.

121. Granville to Paris, June 25, 1872, BSP 82-53-17-D14-inc.1.

122. Humphrey Slater and Correlli Barnett, The Channel Tunnel, (London, 1958), p. 29.

123. Earl of Derby to Lord Lyons, Dec. 24, 1874, BSP 75-78-138-D2b.

124. ibid. Travis p. 22; The British promoters' best chance for acquiring start-up capital was dashed when French investors rejected the Anglo-French Committee's right to apply for French concessions (and French private sector money) as a single entity. In December 1871, the Committee decided that it would raise 4,000,000f. with the help of French business. But those same investors wanted the French concessions (and capital) to be granted to French comapnies alone because of differences in English and French legislative processes. See The Times, January 18, 1875; See also Lord Grosvenor's testimony before The British half of the Channel Tunnel Commission April 29, 1875, BSP 82-53-P103-D67-inc.3.

125. Travis, p. 20.

126. In fact, wide-spread confidence in the project as a risk-safe and profitable venture among prospective investors never came. Reviewing the depth of support in the business community, the Select Joint Committee on the Channel Tunnel was to report in 1883 that since neither the Chamber of Commerce nor any other organisation nor individual representing trade or industry had volunteered their encouragement to promoters, the Committee was "led to infer that men of business do not believe generally that their interests are likely to be beneficially affected by the construction of the Channel Tunnel." Draft Report on the Select Committee on the Channel Tunnel" BSP 83-12-P30. In January of 1876, an article had appeared in Pall Mall Gazette, warning potential British investors in the tunnel to wait "for the criticism of experts in their own country." Pall Mall Gazette, Jan. 11, 1876.

127. Procedings of Evidence before Channel Tunnel Commission, BSP 82-53-P96-D67-inc.3.

128. ibid, p. 99.

129. ibid, p. 100.

130. ibid p. 131.

131. Minutes of Evidence Before the Channel Tunnel Commission, May 10, 1875, 82-53-PP111,112-D67-Inc.1.

132. The Times, February 4, 1882.

133. Draft Anglo-French Treaty article 9.

134. Folkestone to Board of Trade, August 19, 1880, BSP 82-53-P309-D168.

135. SERC to Board of Trade, October 19, 1880, BSP 82-53-P307-D166.

136. BSP 82-53-307-D168.

137. The Times, June 17, 1881.

138. Board of Trade to SERC, June 25, 1881, BSP 82-53-309-D172.

139. Board of Trade to War Office, July 5, 1881, Correspondence on the Proposed Channel Tunnel, BSP 82-53-P182-D114.

140. Board of Trade to Admiralty, August 11, 1881, BSP 82-53-183-D119.

141. Board of Trade to War Office, Feb. 3, 1882, BSP 82-53-193-D137.

142. See Chamberlain's statement to the Commons, February 22, 1883 Hansard, p. 578, v. 276.

143. Watkin to Board of Trade, September. 14, 1881, BSP 82-53-D187-P319.

144. The Times, July 7, 1882, p. 9.

145. See Parliamentary Committee on the Formation of the Board of Trade, BSP 67-39-P213; see also letter of Board of Trade to Treasury, July 19,

1881, BSP 82-53-P311-D174; in the Act to Amend the Law relating to the Woods, Forests and Land Revenues of the Crown (1866), section 7 transferred the management of the Foreshore from the Office of Woods and Forests to the Board of Trade. However, section 21 reads that "Nothing in this Act shall apply to any Beds, Seams, or Veins of Coal or Stone or any Metallic or other Mineral substances in or under the Foreshore, or to any Mines or Quarries thereof, and the same shall continue and be vested, held, and enjoyed as if the Act had never been passed." See The Law Reports, 1866, volume 1, page 514. The reason for the Board of Trade's concern over section 21 is never made clear in their correspondence, however it might have been due to the uppermost sedimentary layer of the Dover area, which is white chalk. It is nine-tenths calcium carbonate, a metallic element heated to produce quicklime, and used for mortar, fertiliser, etc. See Abel, p. 14.

146. SERC to OWF July 9, 1881, BSP 82-53-P310-D173-INC2.

147. Quotation "licence from this department" from OWF to SERC, July 7, 1881, BSP 82-53-P309-D173.

148. Board of Trade to Treasury, July 19, 1881, BSP 82-53-P311-D174.

149. Treasury to Board of Trade, July 22, 1881, BSP 82-53-311-D175.

150. Treasury to Board of Trade, July 22, 1881, BSP 82-53-311-D175.

151. It was Gladstone, who, as Chancellor of the Exchequer in 1860, had collaborated with Richard Cobden in securing the free-trade agreement with France in the face of stiff opposition on both sides of the the Commons.

152. See statement of W.E. Gladstone in the Commons Debates, Feb 14, 1882, p. 638.

153. Slater and Barnett, p. 74.

154. ibid.

155. This argument was made in the Law Journal: see The Times July 7, 1882.

156. See Statement by E.Stanhope, Hansard Commons Debates, April 3, 1883, p 1382 v. 277.

157. Parliamentary Debates, [Commons], statement of Sir Stafford Northcote, April 3 1883, p. 1370, v. 277.

158. See statement of the Marquess of Salisbury in Hansard Lords Debates, April 6, 1883, p. 1627, v. 277.

159. See statement of Sir Asshton Cross in Hansard Commons Debates, April 3, 1883, p. 1379, v. 277.

160. "Draft Report of Select Committee on the Channel Tunnel", July 10, 1883, [44pp]. See Committee member Sir Henry Vivian's citing of an Intelligence Department paper reporting that between 1700 and 1871 there were 171 cases of hostilities commencing without declaration p. 37, para. 73.

161. Ibid. See statement by Committee member Sir Henry Vivian, p. 30, para. 70.

162. General G. Wolsley, "Memorandum", BSP 82-53-224-DD137/8 inc.3

163. "Draft Report etc.", See statement of Sir Henry Hussey Vivian p. 38, para. 81.

164. With the claim that the Channel Tunnel would provide quicker and cheaper transport to Europe, the promoters failed to produce figures as to the portion of goods likely to be diverted to the tunnel and to the savings in transport costs that a tunnel would accrue. Similarly, in his attempts to discredit the promoters' claims that an all-rail route was no less costly than a mixed land-sea route, one committee member quoted the evidence of one witness who stated that the cost of finished

goods transport from Bradford to London was more than the cost of the mixed route from London to Roubaix in France, Bradford and Roubaix being of equal distance from London. See statement by Sir Henry Hussey Vivian, ibid. pp.32-3. This argument held little water, however, since the evidence may have reflected more an inefficiency of British rail transport than the cheapness of the mixed route.

165. See, for example the series of articles in Nineteenth Century for Feb. and May, 1882.

166. James Knowles, "The Proposed Channel Tunnel: A Protest" in Nineteenth Century, April 1882, pp. 495-7.

167. "The Channel Tunnel", E.B. Hamley, Nineteenth Century May 1882, pp. 673-4. 168. Annual Review for 1883, p. 139, London, 1884.

169. Jenkins, p. 134

170. Sir Garnet Wolseley, "Memorandum", BSP 82-53-210-DD137/8 Wolsley's conscription argument must have been widely accepted in a country where military values were regarded with such disinterest by the civilian population in peace-time. By 1880 English society had been nurturing a mistrust of large peace time armies on home soil for over 200 years. This rejection of militarism dated back to the Draconian measures of Cromwellian rule which depended upon a strong military presence. Later, the Act of Settlement giving the Hanoverians reign by parliamentary rule in 1701 forbade the establishment of a large peace-time army by the sovereign, without parliamentary approval. Analysts of the military's impact on society in eighteenth and nineteenth century Britain agree that the army's role was centered on defending *status quo* abroad while maintaining a low profile at home. The distaste for the military way of life amongst the public and the dependence on sea power for home defence insured that the army remained outside the fold of political and social affairs. See Jenkins, pp. 1-11.

171. Dunsany, "The Proposed Channel Tunnel", The Nineteenth Century, Feb. 1882, p. 289.

172. Lord Dunsany, "The Channel Tunnel: A Rejoinder" Nineteenth Century, April, 1882, p. 304, 313.

173. See letter of Sir A. Cooper Key to Lord Northbrook, Jan. 31, 1882, BSP 82-53-190-D134.

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